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ABSTRACT

Reprinted from "The Computing Teacher," this document contains software reviews for 23 computer programs that educators could use in the classroom or for administrative purposes. Each review describes the program by listing the program title, subject, producer, grade level (if applicable), hardware required, cost, and reviewer's name and professional affiliation. In addition, some reviews contain the program author or publisher's response to the critique. Programs reviewed include: (1) Gertrude's Secrets; (2) Gertrude's Puzzles; (3) Rocky's Boots; (4) The Print Shop; (5) Letters and First Words; (6) Delta Drawing; (7) Turtle Tracks; (8) Microcomputer Physics Lab--Heat; (9) Precision Timer; (10) Graphical Analysis; (11) Ray Tracer; (12) Characteristics of a Scientist; (13) Geography Search; (14) Kidwriter; (15) Story Maker; (16) Bank Street Story Book; (17) Story Tree; (18) Bank Street Writer; (19) Bank Street Speller; (20) Appleworks; (21) Quill; (22) Musicland; and (23) Bank Street Musicwriter. (JB)

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SOFTWARE REVIEWS

From the Computing Teacher
(Listed as they appear)

Gertrude's Secrets
Gertrude's Puzzles
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Microcomputer Physics Lab--Heat
Precision Timer
Graphical Analysis
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Characteristics of a Scientist
Geography Search
KidWriter
Story Maker

Bank Street Story Writer
Story Tree
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GERTRUDE'S SECRETS
Reviewed by: David Ouellette, University of Oregon, Early Childhood Education Center
Producer: The Learning Company (TLC)
4370 Alpine Road
Portola Valley, CA 94025
Version: © 1982
Target Audience: Ages 4 to 9
Hardware Required: Apple II with one disk drive, color monitor (joystick optional).
Cost: $44.95

GERTRUDE'S SECRETS creates a wonderfully rich, simple and educationally sound "microworld" with places, objects and relationships that the young children I observed wanted to explore actively. As the children learned to move in Gertrude's world, to pick up objects, move them and to set them down, a magical door opens (SHAZAM!).

Inside Gertrude's domain the child constructs personal hunches and theories about possible relationships of shapes and colors in the puzzles which they test immediately as they play. I saw children joyfully incorporate correct hunches into what they knew about color, shapes and patterns. The children generated their own positive self-concepts about their own problem-solving abilities as they played and solved puzzles. Each good hunch can lead to another here, so Gertrude's world helps reinforce the value of working out one's own understandings, of trusting one's own learning abilities.

Gertrude's world holds three different kinds of attribute relationship puzzles. Each kind has a simple form and at least one more complex form farther out from Gertrude's central nest. The microworld is completed by a treasure room which stores the treasures a child accumulates by solving puzzles and by three other rooms for playing piece shapes and shape changing.

While the strengths of GERTRUDE'S SECRETS far outweigh its weaknesses, I found that colors of closely packed playing pieces misleadingly change color as they bump into each other. On the other hand, GERTRUDE'S SECRETS is the most appropriately implemented microworld (see Papert's *Mindstorms*) that I have seen for young children's learning about recognizing and using logical relationships.

Specific strengths of GERTRUDE'S SECRETS include:

- its simplicity for non-readers, especially the input routines
- child-controlled pacing, choice of movement and changes of intention
- an optional shortcut entrance into Gertrude's world for experienced players
- effective rewards for solving puzzles and for continuing to solve them
- tasteful (not brash, flashy or loud) use of sound and color
- the possibility of many different ways to solve any one puzzle
- the opportunity for an adult or researcher to observe a child's problem-solving strategies in an engaging and standard environment

GERTRUDE'S SECRETS is a gem, the kind of software new educational programs will be judged against. It presents young learners with a kind of logical relationships wading pool, safely enjoyable, a place to splash around, an effective environment for making a beginner's sense of the logical relationship waters they will spend a large part of their school years mastering.

Publisher's Reply:

In response to the reviewer's complaint about the color change of the playing pieces that bump into each other:

This is a hardware problem. We realize that figures that are close together on the screen of the Apple computer will meld their colors. Software designers should be aware of this problem. We were sorry that we were unable to solve it.

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Gertrude's Puzzles (1982)
The Learning Company, 4370 Alpine Road, Portola Valley, CA 94025
Target Age Group: 6 and up
Hardware Required: Apple II+, Apple IIe (with caps lock down), color monitor
Cost: $44.95
Additional Requirements: Joystick optional
Reviewed by Johnny W. Lott, University of Montana

Gertrude's Puzzles is a set of puzzles designed to help children develop reasoning skills. In these puzzles, players learn how to sort and classify objects. They also learn to solve problems with incomplete information and must analyze what they see. The program consists of two main sections. The first is a tutorial section which teaches the user how to pick up and drop shapes, control speed, and do all the things they need to know to move around in the world. The second section is the game part. Players solve puzzles by using loops (Venn diagrams), networks and boxes (which use classifying and sorting in a manner reminiscent of magic squares).

In all puzzles, players move pieces to form color and shape patterns. Some of the puzzles give players rules for playing, while others force players to determine the rules. When a puzzle is solved, Gertrude brings a treasure.

There are six different puzzle rooms—a simple and more advanced room for each of the three types of puzzles. In the network puzzles, misplaced pieces move slightly if placed incorrectly. In the loop puzzles, pieces fall out of the puzzle. Examples of completed puzzles are given in rooms that do not have doors—only viewing windows. The initial shapes used are geometric shapes, and another room is the Shape-Edit Room where players may create their own shapes.

Strong points: The software is attractive with very good graphics. Directions are very clear for players who are reading at fourth grade level. Some skill is required to use the control key to move a key to open the door to start the puzzles. The I, J, K and M keys are required to move the cursor up, down, right and left, and the repeat key will make the movement faster. A player can take as much time as needed. This software can be used by a player with little teacher direction.

Weak points: The reading level is too advanced for most six-year-olds. Average fourth graders thoroughly enjoyed it, as did talented seventh graders. In the software the impression is given that a joystick must be used in the Joystick Room, but that is not true. In the Blue Room of direction, the control key and space bar will not let the orange square be moved as the directions state, and there is a misspelled word. When first using the software additional problems emerge, which include the cursor not always picking up the piece that it is on, but another that is very close. In the Box puzzle, one piece is under another piece at the start of play. This can be very confusing to beginning players.

Recommendations:

Gertrude's Puzzles is a fascinating set of logic puzzles for both children and adults. It is as effective, or more, than using attribute pieces to teach classifying and sorting. It is too bad that the reading level is too high for the advertised age group, but otherwise it is an excellent piece of software.

[Ed. note: We have seen a final draft of the revised manual, and want readers to know that future editions will include an even more elaborate and helpful manual.]

Publisher's Reply:

Thank you for sending the proofs for the upcoming review of *Gertrude's Puzzles* for TLC comment. The educators within our Research and Development group have evaluated the issues the reviewer raised and have provided the following responses.

1. *Reading level too high for average six year old*—The age range six and up means six and up. Not all six year olds can be expected to be at the same skill level; however, some will be able to understand the reading/instructions.
2. *Orange square doesn't move*—The colored part of the cursor must touch it in order for it to work; however, in the new version this is not required.
3. *Misspelled word*—This is also fixed in the new version.

Again, thank you for allowing us to comment.

Karen Roebuck
Public Relations
The Learning Company

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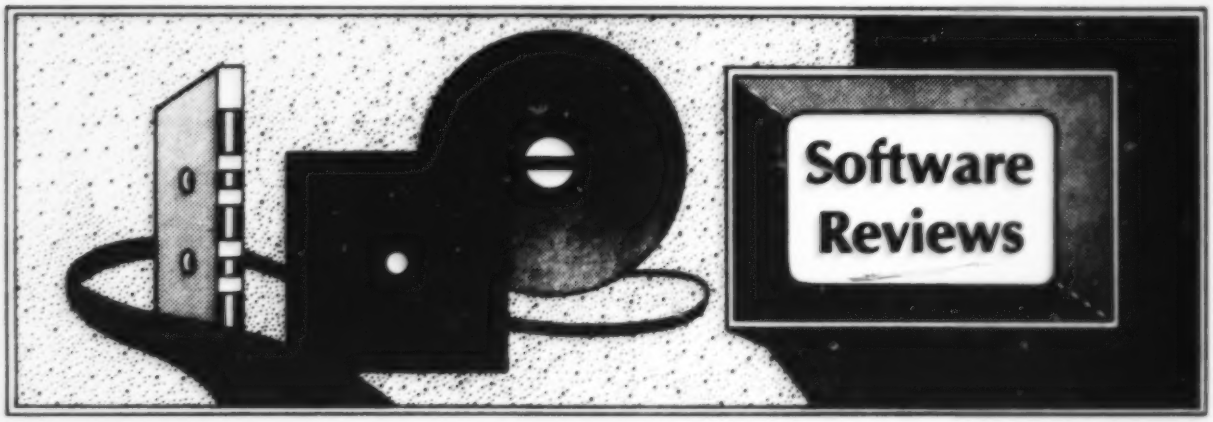

Editor
Doris Carey

ROCKY'S BOOTS

Producer: The Learning Company. Available from local Apple dealers.
Reviewed on: Apple II Plus (48K), 1 disk drive, color monitor recommended.
Cost: $75
Age Level: 7 years and up.
Options: Joysticks.

Reviewed by Eric Anderson
Library/Media Services, Dakota C.U. Unit 201
Dakota, IL 61018

". . . Now somewhere in the black mountain hills of Dakota
There lived a young boy named Rocky Raccoon
And one day his woman ran off with another guy
Hit young Rocky in the eye Rocky didn't like that
He said I'm going to get that boy
So one day he walked into town
and . . ."[1]
went to a computer store
to buy himself a copy of ROCKY'S BOOTS.

The more software one reviews, the more cynical one becomes. Very rarely do programs excite me; the state of jumping up and down over a software item has passed. I remember the awe *DB Master* and *Screen Writer* and *Super Disk Copy* produced in me the first time I ever saw them run. *Castle Wolfenstein* caused me to give up 700 hours of my life before I escaped. It's been a long time since that sort of excitement returned. *Rocky's Boots* has rekindled that flame.

If the computer is indeed another piece of AV equipment, then librarians need to use the same criteria for microcomputer software selection that they use for other forms of educational media. A complement of sight, sound, color, motion and gee-whiz are the forte of the microcomputer. Many programs use one or more of these components. Never have I seen a software piece use all of these to the extent they are utilized in *Rocky's Boots*.

Rocky's Boots is a game designed to teach Boolean Logic and basic elements of computer circuitry to people seven years old and older. It uses a unique combination of hi-res graphics, sound and motion to fascinate the computer user into creating machines to perform tasks.

The game aspect is really underplayed. It took me three hours to realize that the object of the game was to score points. One scores points by making a machine to kick object targets out of a trough. The object targets vary in shape and color and the player must connect logic gates in such a matter that only the objects of a desired shape or color are kicked when they pass through sensors.

Most computer games are threatening. Here come the aliens—blow them out of the sky before they wipe you out. Succeed or die. *Rocky's Boots* does not play to this audience. Games also have predetermined time frames and limited sets of characters. You can stay with *Rocky's Boots* as long as you care to—succeed or not.

In *Rocky's Boots*, the user starts out by learning how to move and pick up pieces. Then one learns the different types of pieces to put together and the forms for construction. The player goes from room to room collecting parts to connect. Boolean logic is taught by using gates and electricity flow. Current will pass through an "and" gate connected to sensors. Or it will react in a "or" situation or a "not" situation in the same manner. The flow can be connected to delays or timers with the object of turning *Rocky's Boot* on to kick objects out of the target area.

Most computer games have a preset number of options. *Rocky's Boots* goes one better by providing games or letting the user change and modify the shapes or colors to create their own games. The user can also change the speed of the objects and halt them on demand. If that is not enough, one can change the point values of the targets. If my math were better I might be

[1]The lyrics from the Beatles song "Rocky Raccoon" are © 1968 Apple Music Co.

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able to predict the number of probable games to be devised using *Rocky's Boots*. Thankfully I can't count that high.

The drawbacks are minimal, and I will attempt to come out of my euphoria to describe them to you.

Because the game is all hi-res, it takes a long time for the program to load from disk. When such utilities as Bill Basham's *Diversidos* are available, I can't see why companies don't utilize them to speed up loading.

I have always harped about price versus performance. $75 is a lot for a computer game. When I called The Learning Company asking them about volume discounts (I wanted to buy one copy of *Rocky's Boots* for each of the computers in my district—a total of 12), they told me there was no discount save the 10% educational discount. Readers should make a point of checking with individual dealers to see whether they offer volume or educational discounts.

There is the option of playing the game with joysticks. I do not own any, the district does not own any, and I much prefer to use the keyboard. I escaped from *Castle Wolfenstein* in 700 hours without them and *Rocky's Boots* performed well without them.

The use of color is very important. I played it for a long time on my green screen at home and had some difficulty. When I took it to school and used the color monitor it was much easier. With small children where the frustration consideration is very important, color monitors should be used with *Rocky's Boots*, at least at the more advanced stages.

One small point that my student programming ace Kent Welling brought up was the representation of electricity. He claims it moves much faster than displayed on the *Rocky's Boots* screen. When a switch is tripped or the cursor passes over a wire, current moves in a direction. The program animation of this is very slow. I guess that's what happens when you teach 17-year-olds the laws of physics.

The package is your standard Learning Company product. Disk-sized holder with thorough documentation booklet. As with all good software, I booted it first and played with it for three hours before I looked at the documentation. There is a nice full-sized page foldout detailing the world of "Rocky's Challenge," the main game on the disk. Let's see, I have a xeroxed copy of that map by my computer at home; one hanging above the computer in the library, one pasted inside my briefcase. . . . Do you suppose I am getting possessed?

It's very difficult to describe my reactions to *Rocky's Boots*. There is a "wow" sort of response that goes back to my first set of Lincoln Logs and Tinker Toys—building and fantasizing all wrapped together. Added to that is the thrill of putting my first radio set together and all of the really neat science labs I remember from 5th and 6th grade.

I have no conclusive reports detailing how well *Rocky's Boots* works with younger children. Some of the junior high and high school kids have fought over my copy of the disk. As of yet we have not gotten the disk into the hands of our primary people. My daughter has played it once (she's just turned six) and enjoyed it. Presently she is so wrapped up over Santa Claus and the holiday season that the computer isn't very exciting.

As long as I have been reviewing software packages I have screamed about price versus performance. A game costing $75 is without question an expensive proposition. *Rocky's Boots* is the first $75 educational software item I can recommend without reservation.

Publisher's Reply:

A comment on the representation of electricity: the program was designed so the user can see the direction of the flow. This is why the electricity seems to flow slowly. We are aware of this feature and it was done on purpose.

All our products are thoroughly field-tested in both home and school at a variety of age levels. We sometimes follow up on suggestions made by children and make changes.

Rocky's Boots is being tested at the Bing Nursery School at Stanford University with five- and six-year-old children. It is also in use at the Capitol Children's Museum, Harvard University and Columbia University. Graduate students at MIT are also using the program.

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THE PRINT SHOP

Broderbund Software, 17 Paul Drive, San Rafael, CA 94903

Purpose: Creation of signs, banners, letterheads, etc.

Hardware Required: Apple II+, IIe, IIc and III in II-emulation mode, Apple DOS or ProDos, 48K of RAM and one disk drive.
Commodore 64 and one disk drive.
Dot matrix printer with graphics capabilities.
KoalaPad or joystick (optional).

Cost: $49.95 (Apple version); $44.95 (Commodore version)

Reviewed by: Merrianne Metzger, Computer Education Director, Bend-La Pine School District, Bend, OR

I predict that *The Print Shop* will be purchased by more schools than any other piece of software during the 1984-85 school year. Strong words, eh? But then this is a truly innovative piece of software.

Description

The Print Shop allows you to make wonderful signs, letterheads, stationery, greeting cards and banners. It is so simple to learn to use that you will be creating your first product within minutes.

The program is divided into separate sections for greeting cards, signs, letterheads, banners, backgrounds and graphic designs. Once you have chosen a section, you can first choose from 60 graphic designs such as animals, holiday icons, border prints and school-related designs—or create your own. Next you can select from eight different print fonts in two different sizes. With font names such as tech, block, party and typewriter, you get the idea of their versatility.

Before using the program, you need to call up the section titled "Setup," which asks you to specify your printer, printer interface card, printer slot number and number of disk drives. If you don't know these things, you will need to find out before you can print hard copy. It is important to note that this program does not work with all printers. It does work with the Epson RX80, MX80, MX100, FX80, FX100; Apple dot-matrix; Imagewriter; C. Itoh; NEC 8023A; Star Micronics 10x and 15x; Okidata 92 and 93; and Apple Scribe. If your printer is not listed here, check with your dealer or call Broderbund before purchasing the program.

Suggested Uses

This review can't begin to cover all the uses of this program. It can be used to enhance bulletin boards (no more long hours spent cutting out letters for slogans and titles), to advertise school activities, to make posters for upcoming events or student body campaigns. Students use it to generate personalized greeting cards for a fund-raising activity. On a holiday such as Valentine's Day you will need to dedicate a printer for the cause. Banners can be made to advertise or celebrate any number of events. It is an eye-catching way to recognize contest winners, the fact that your school principal is having a birthday, or any other special event. In the face of tight school budgets, this disk can do some of the things the district's graphic artist used to do. Every instructional media center should have one. Actually, its uses are limited only by the imagination. Staff members will want to design their own personalized letterhead and then reduce it to note pad size. The cover pages of district-developed curriculum or district reports will soon show the effects of *The Print Shop*. Students, of course, will think of uses not yet conceived of.

Strengths

This program does exactly what it professes to do. It is easy to use and handles errors well. Menus guide you through each section and the prompts are so well written that it is actually fun to use. If you do make a mistake or want to change your design, it is easy to do. You can also stop the printer if you decide you want to make some changes after the print command has been engaged. It doesn't require use of a graphics card nor does it require the user to know anything about graphics. The back of the disk includes a demonstration that describes some features of *The Print Shop*. The program was written for a color monitor but works nicely with a monochrome monitor.

A nice touch is the fact that 20 sheets of bright-colored computer paper and eight matching envelopes are included in the package. There is also an order blank, so you can order extra colored stock and/or colored printer ribbon. If you don't choose to order colored printer ribbon, a felt marker works wonderfully to enhance your products.

In addition to creating a very usable piece of software, Broderbund has also come up with a reasonable licensing agreement. The disk has a 90-day limited warranty. After that, Broderbund will send a replacement disk for $7.50. You are also allowed to make one copy of the program using a built-in utility.

Weaknesses

The program has very few weaknesses—it does what it was designed to do very well. The fact that it does not underline was a minor irritation when I tried to use it to make certificates (a logical use of such a program).

Using the KoalaPad or joystick allowed for a great deal of creativity in the creation of graphic characters, but I was disappointed in the size restrictions when using the graphic editor section of the program.

Be aware that this will be a heavily used disk—extra printer ribbons should be ordered so that replacements are available as the old ribbon starts getting faint. Also, recognize that it takes time for the printer to generate a banner, especially if you use the option to create solid instead of outline printing.

Summary

The Print Shop is an exceedingly well-written, useful program. It was designed to make posters, banners, letterhead, stationery and greeting cards, but with a little creative thinking you will find an almost unlimited number of uses.

This program will probably be one of the most frequently used in your school. It is so easy to use, Broderbund advertises that use of the manual is unnecessary. They are nearly correct. It does not require any special equipment or knowledge to run through and print out your selection. This is a program I highly recommend. **END**■

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LETTERS AND FIRST WORDS
C & C Software, 5713 Kentford Circle, Wichita, KS 67220
Grade/Target Age Group: Ages four to eight years
Subject: Reading
Hardware Required: Apple II, II+ and IIe (48K RAM); Franklin Ace; single disk drive; color monitor recommended
Cost: $40
Reviewed by: Scott Turner, First Grade Teacher, Washington Elementary School, Vancouver, WA

Letters and First Words consists of three multi-level learning activities that provide practice in phonetic reading skills. A well-designed and versatile educational management program allows the teacher to control and monitor presentations to individual students.

The first activity, "A-B-C," presents a letter along with its associate picture. The pictures have been carefully chosen to represent the word's initial letter sound. The child uses the arrow key to position a box around the matching letter from among four choices, and then presses RETURN. If the correct choice is made, the picture then becomes animated for two or three seconds. If two incorrect answers are given, the matching letter is shown. Pressing the SPACE BAR will bring the next display. The highest level of "A-B-C" requires the child to match letters in different cases.

"A-B-C" presents a letter and asks children to match it to one of a group of upper or lower case letters.

The second activity, "Letter Sounds," presents a letter along with a number of example pictures beginning with that letter and sound. The child is then asked to choose another picture that begins the same way. Final consonant sounds and middle vowels are treated in higher levels of the game.

In the lowest level of the third activity, "Building Words," a picture is displayed and the child must choose the correct three-letter word. At upper levels of play, a picture is displayed and the student spells simple words.

It is the educational management program that sets this program above the rest. The teacher can make modifications to meet the needs of a variety of learning situations. In the least restrictive case, the program can be set up to require the user to pick one of the three activities. The presentation would begin at the lowest level of play and progress to higher levels as mastery is displayed.

The score-keeping features can be fully used if a student's name is entered before play begins. The computer will keep track of the score along with the current level of achievement, and save it on disk. Each time children use the program, they begin where they left off.

Current cumulative scores for an individual student or the whole class can be run off on a printer. Information on number of attempts, number correct on the first try, and number wrong is provided. One missing piece of information is the student's current level. This information is available in another section of the management program, but I found it cumbersome to have to call it up and write it on the printout.

Maximum program control can be gained by requiring that each name used match a name on your predetermined roster. Students can then have their presentation personalized. Separate entry and target levels can be set to meet the needs of individual students or to test for a specific skill.

Other modifications are available through the management program, including control over the selection of pictures to be used with each letter sound and the problem emphasis. The sound can also be controlled between full effects, minimal or none.

Letters and First Words works well with young children. Minimal teacher supervision is needed due to self-pacing, effective displays and ease of control. Directions and prompts can be given in words or through symbols that match the keyboard stickers.

In my first grade classroom it is up to students to set a mechanical timer that signals the end of their turn. This is a questionable method at best, given the user's age. Some type of timing option that would allow each student a given number of minutes to use the computer during each session would be a welcome addition.

Success in using this program is based on the assumption that children know what word each picture stands for, and that they have the correct phonetic pronunciation. The directions have an option to view the pictures used, but the display is not adequate for large group presentations. I wish that flash cards were provided. In many cases, the words for the pictures have to be taught to the children before they attempt the program.

While *Letters and First Sounds* cannot be considered a complete reading program, it can, when used in conjunction with other material, be a valuable resource to anyone who is teaching beginning reading. Its management options allow the teacher to control the presentation along with maintaining accurate records of student progress. This is the best phonics reading program I have seen.

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DELTA DRAWING
Subject: Graphics programming
Producer: Spinnaker Software
215 First Street
Cambridge, MA 02142
Version: © 1982
Hardware: Apple II+ with 48K and one disk drive with DOS 3.3; printer (optional). Printer requires either a Centronics Parallel card or a Grappler card.
Target Age Group: 4-adult
Documentation: 80-page manual and eight "Fast Start" cards.
Back-up Disk: None provided.
Price: $59.95
Reviewer: David Lang, Eugene, Oregon.

To determine how heavily this software depends on external documentation, I began my review of this program by ignoring the explanatory booklet and simply turning on the computer. The screen menus easily led me to the beginning of the program and I found myself facing a triangular "delta" cursor with no idea of what to do next. Clearly I needed more information. Upon reading through the first six pages of the documentation, I learned that the Fast Start cards contained enough information to send me happily chasing turtles around circles.

It is this immediacy of DELTA DRAWING that appeals to me. In minutes I was creating programs that were visually exciting and often surprising.

DELTA DRAWING is a turtle-graphics-style programming environment. The user controls the cursor either in the graphics mode or in the text mode. In the graphics mode, the user gives directional commands to a turtle whose path is traced on the screen. In the text mode, the user enters the commands into a text program that the turtle then executes. Once a shape is created, it can be used as a foundation for other programs.

An example:

Command	Meaning	Function
D	draw	moves the cursor 1/4 inch
R	right	points the cursor right 30 degrees
1	name of first program	combines the above into a single command
press '1' 12 times	execute program #1 12 times	a 12-sided figure is created
2	name of second program	combines the 12 commands into a single command

DELTA DRAWING helps children learn about shapes, colors, compositions and patterns. It gives them opportunities to express their ideas and develop ingenuity through visual thinking in a friendly and forgiving atmosphere. By trial and error, children can explore an idea, and if they don't like the results, they can easily change it. The manual asserts that with DELTA DRAWING there are no mistakes, only unexpected results.

While older children should have little trouble learning to use DELTA DRAWING (most of the commands use only one key), younger children will require a great deal of instructional supervision. The "no errors" learning environment encourages experimentation and learning in all age groups.

A ten-year-old friend who tested DELTA DRAWING enjoyed it and soon moved from drawing his ideas in graphics to writing the procedrues in the text mode. It was interesting to watch him think through the procedures for creating a triangle. After each try he would discuss what happened, what should have happened, and then he would try again. His enjoyment and learning were apparent even in the short time he was working with this package.

Weaknesses:

- DELTA DRAWING does not come with a backup disk and is copy-protected, so users cannot make their own.
- The command that turns on the printer should take at least two keys so that it cannot be accidentally activated.
- The manual needs an index.
- The erase command should be interruptable to prevent a disaster in case the "e" (erase) key is accidentally pressed.
- The text editor should be more powerful by allowing insertions and deletions anywhere within a program.

Summary: DELTA DRAWING is a good educational package. Its visual approach makes it very appealing. DELTA DRAWING achieves what it sets out to do: create an easy-to-use, error-free learning environment. It is fun, dynamic, visually exciting, and encourages experimentation. It is well packaged. The Fast Start Cards are sturdy and informative. The manual is reasonably well written, although the authors tend to alternate between addressing the adult helper and the child user.

While DELTA DRAWING is a powerful and stimulating package, it lacks the complexity and added functions of other Logo-type programs. I believe DELTA DRAWING merits close examination and comparison with other programs of its type on the market.

Publisher's Reply

DELTA DRAWING™ teaches a child procedural thinking, the concept of program nesting, and the relationship between a command and a graphic effect. Children never "make a mistake" with this program—they just produce unanticipated, but very pleasing, results!

Spinnaker aims to make learning fun and DELTA DRAWING does just that by guiding the first-time computer user into the world of personal computing.

Nancy Evans, Editor
Spinnaker Software

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TURTLE TRACKS
(1982 software; 1983 handbook)
Scholastic, Inc., 730 Broadway,
New York, NY 10003
Grade/Target Age Group: 9 and up
Subject: Computer Literacy
Hardware Required: Apple II, II+ or IIe (48K). (See also note at end.)
Cost: $39.95
Reviewed by Marianne Handler, South School, Glencoe, IL

Congratulations to the team of Tom Smith and Scholastic! *Turtle Tracks* has taken the best of Mr. Smith's earlier program and made it even better. It is well done, user friendly, and educationally sound. Mr. Smith had written in his earlier documentation that his program was meant to be a teaching tool and was designed expressly for that purpose. He feels that early computer experiences should parallel the introduction of other concepts that use manipulatives. *Turtle Tracks* therefore provides some instruction, some practice, a great deal of exploration and discovery time and an opportunity for children to realize that they are, indeed, in charge of the computer.

Like Logo, the commands are simple and as in BASIC, line numbers are required. The student can run (command:R) the program and see what s/he has created or he can *walk* (command:W) the program step by step to find his or her errors and debug it. Each chapter in the short but inclusive handbook is very specific in its description of the new commands, and includes a directed experience for trying them out. Then there are several opportunities for exploration following this exposure. *Turtle Tracks* makes use of a two-screen format. Programs are entered on the "blackboard." When the program is completed or the student wishes to see it at any given point, s/he need only enter R and press RETURN. The message RUNNING appears on the blackboard and then the Turtle Screen appears and the program is run. Pressing RETURN again will bring back the blackboard and programming may continue. In addition, the 60-page handbook lists all the characters available, some common errors and why they occur, as well as solutions to the variety of challenges in the book. Several pages are left for student notes. It would probably be better for students to keep their journals on other paper, however.

Students have an opportunity to work with both color and sound in this program. In a unique format, *Turtle Track*'s color chart combines the color of the turtle and a background strip in the same command. These can be combined with any of the 127 characters that the turtle can print. For example, if the program lines were to read

10 P#45:16	(PM:16 would also do it)
20 DF24	(DF stands for DRAW FORWARD)

the turtle will draw 24 M's in white on an orange background. If character #0 is used, a solid background can be drawn in the color of choice because character 0 acts as a blank.

Just as the P command changes characters and color, the command B (for Beep) brings sound and music. The numbers represent a note along a four-octave range and can also represent the duration of the note. Even rests can be built in by using the REPEAT LOOP command with nothing in the loop. It acts very much like a FOR-NEXT loop.

Turtle Tracks has two additional features. It is possible to enter a "Microcode" and use the "Microturtle" to create new characters. These new characters do, in fact, replace existing characters as long as they are in use and will remain until the computer is turned off and can be saved for use at another time. It was really neat to create my own shape and have that be the trail that the Turtle left behind. The second feature allows children to use the printer by using just two simple commands. LPAPER will print out the list of commands or instructions that have been given to the computer, and PAPER will print out the graphic that is currently on the turtle screen.

As with all programs, there are some drawbacks. The turtle can turn only 90°. TR (Turn Right) and TL (Turn Left) do not take any inputs. It is possible to draw a diagonal line but it requires a loop procedure.

In addition, *Turtle Tracks* comes with one disk. Scholastic's Customer Service department informed me that at this time it is not company policy to provide a back-up disk. The good news is that Scholastic will replace a defective disk for $5.00 even beyond the ten-month period following the 60-day warranty period) that is described on the Warranty Registration Card.

In *Mindstorms*, Papert talks about the difference in making a mistake in content areas and making a mistake on the computer. Working with *Turtle Tracks* makes that point. It is not a terrible thing to make a mistake in a program. A program is rarely, if ever, correct the first time it is displayed; going back and debugging the program is a natural step.

Students reap benefits working with this kind of program. It will help them to look ahead and plan a project, find errors and correct them, and share their ideas with other students. Scholastic recommends this program for use with students nine and older. I disagree. Second and third graders can be introduced to the beginning commands, use them well and learn how to plan and debug the programs they are writing. The commands are simple enough for children to plan interesting graphics. Older students will begin to use the variables and find their use adds an exciting dimension to their programming. They can also create and save new commands for the turtle to use. The planning skills, problem-solving experiences and comfort in working with the computer that primary and intermediate students can experience in working with *Turtle Tracks* will be an excellent component of a total Computer Literacy Program. This turtle may not be as sophisticated as the Logo turtle, but *Turtle Tracks* will serve very well in an elementary school setting.

Note: *Turtle Tracks* is currently available for the Atari 400/800 (24K cassette, 32K disk); for the TI 99/4A (32K cassette); and for the VIC-20 (13K cassette). Disks are $39.95; cassettes $29.95. They are very similar to the Apple version; check with Scholastic for the exact differences. In addition, *Turtle Tracks* will soon be available for the Commodore 64 and the IBM-PC. Those prices may be somewhat different and are not available at this time.

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MICROCOMPUTER PHYSICS LAB—HEAT
Cross Educational Software
P.O. Box 1536
Ruston, Louisiana 71270
Grades 10-12

Apple II + or IIe
$60.00

On a slightly lower scale, in both price and execution, we have the programs from Cross Educational Software. Dr. Mark Cross has written articles about educational philosophy in *Call A.P.P.L.E.* and elsewhere and has a firm foundation in physics as well.

Rather than an all-inclusive program dealing with many measurements, Cross has taken the method of providing modules. The one I reviewed was dealing with heat. There is another one dealing with light which measures the time interval between flashes of light or something blocking the probe, such as a cart moving down an inclined plane or a pendulum. For $60.00, you get a diskette, a three-ring binder for documentation, and the necessary hardware for four temperature probes. To use them, however, you have to put them together, which is not really that hard. It involves soldering four wires onto a 16-pin plug and the other ends to two thermistors (which look like little blobs of metal with two wires coming out). Everything is provided except the solder and a soldering pencil.

Rather straightforward and simple, the programs on the disk allow you to calibrate the thermistors (each one will be slightly different when you get them hooked up), get a continuous readout of temperatures on the screen, or, most importantly, see the temperatures displayed both in digits and in a nicely done graph on the screen. The range of the temperature graph can be set as narrow or wide as you want, and the time interval between temperature readings is adjustable between one and 1000 seconds. That means a graph can display 270 seconds (4.5 minutes) or as long as 270,000 seconds (75 hours). You could, for example, set up a heated object in a box with some specific insulating material and come back the next day (or three days later) and see how the temperature had dropped. A second thermistor could be reading the room temperature's variation at the same time and a third just be a control in a box of insulation. (A fourth thermistor is provided if you want to hook it up.)

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Your graph would show all three lines in a quite readable form on the screen. If you wish to have a hard copy of the numbers, just turn the printer on before you leave and the numbers will be listed there instead.

The program could be easily modified to write to a file on the disk, although timing might be changed slightly.

You can do that sort of thing because Cross Software has no "protections" on the disk. You can copy it or modify it as you see fit. This program can easily be used by a student without much preparation, but full usage of this package assumes there is a real teacher out there who is willing to experiment with new applications. The manual gives outlines of five experiments for use and also includes listings of all programs used on the disk, including the assembly language timing routine, for you to learn from and modify.

I had a problem with the program when I first received it. I wrote a letter to Dr. Cross and had a new, corrected version back in the mail within five days. A letter accompanied it that showed I was dealing with a real, live person who cared about how his software worked for teachers.

Again, although this software does only basically one thing, it does it well and at a reasonable price.

Also available from Cross Educational Software: 12-volume *Physics* sets ($260.00 total or $15-$35 each); and *Physics Lab-Light* and *Physics Lab-Sound*, both at $60.00.

PRECISION TIMER $39.95
GRAPHICAL ANALYSIS $24.95
RAY TRACER $24.95
Vernier Software
2920 S.W. 89th Street
Portland, Oregon 97225
Grades 10-12

Apple II+ or IIe

David L. Vernier has taken the "module" approach, similar to that of Dr. Cross. In this case, however, the equipment does not come with the software.

The disk called *Precision Timer* is basically a timing device to tell when one of the paddle buttons has been pushed or released. In the operation of this disk, the activation is by light, rather than by pushing a button, although it could be modified to do that.

The disk is designed to operate with "photogates" in a module from PASCO (part #ME-9204). Each of those gates costs $75.00 and you will use two of them. An interface box to the game port costs $100.00 (part #AI-6575). On the other hand, you can build the interface box with *three* photogates using parts bought at Radio Shack for $24.12. Mr. Vernier gives instructions on what parts to use and how to put them together. I know how to solder but am weak on semiconductor devices. Even so, I was able to put together the whole thing in about three hours. The worst part was going around to five Radio Shack stores to get the 18 parts, since each store seems to only have one of each item. Phototransistor FPT-100 usually consists of a card on a rack with "Sorry, out of stock" right behind it. Other than that, putting the hardware together is fairly straightforward.

Once you have everything together, the software does the rest. There are 12 different modes of measurement, depending on how many light sensors you wish to use. Basically, each works by cutting off light to a very small sensor. This begins the timing, and then turning off another or the same one again stops the timing. You can drop a ball past two sensors and get the speed, past three and get the acceleration, let a pendulum go past one sensor twice and get the period, perform collisions with carts or airtracks and get all the data you need. You can also use the keyboard, without any other equipment, to make this program a quite accurate stopwatch (+ or − 0.0002 seconds).

One nice feature of the disk is that all numerical displays can be shown on the screen in numbers four times as big as the normal digits on your monitor. Thus the data collection can be seen from the back of the room for demonstrations or larger group labs.

One caution about this equipment: the third light sensor uses paddle button #2, which is also the pin used in most "shift key modifications" for the Apple. That means that it will appear that the shift key is being held down. One way to do the shift key mod is from the #1 pin of the chip just in front (toward the keyboard) of the game paddle port, to the keyboard #2 pin using spring clips (Radio Shack Cat. #270-372). Installation takes about 15 seconds, but more importantly for this experiment, *disconnecting* it can be done in about 5 seconds.

Up to 100 data points can be collected, and then average and variance will be printed out. For many of the experiments, further mathematical treatment is possible, specific for the usual use. For example, the pendulum experiments will give the data of period, frequency, etc. that you would normally calculate.

The 42-page manual contains a user's guide, a teacher's guide, modifications to the equipment and programs that can be made, and a complete listing of all programs with a table of variables. The disk is completely unprotected so back-up copies and modifications are easily made.

Graphical Analysis can interface with the data from the above experiments, collecting stored data from the disk directly. Or, you can enter pairs of data for up to 32 points.

The disk is a very quick way to visualize data. Putting in the points is one option. Using the Plot option, you can label the axes, put in the units to be displayed, plot just points, points with connection,

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or "point protectors" of boxes around each point. A linear regression analysis can plot the closest fit straight line also. Other menu options give you the choice of exchanging the axes, changing any pair of points, and a numerical analysis section giving slope and intercepts.

The program doesn't do anything really fancy, but for $24.95 you get a very quick way to display lab data in a graphical form. The scales on the side can be done in "auto-scale" mode for quickness, or you can determine the value of each unit for clarity. Although this is not as instructive as learning how to make a neat graph with ruler and pencil, perhaps your interest is in teaching how to *set up* graphical displays and what they *mean*, rather than the mechanics of pencil and paper neatness.

Ray Tracer is an electronic blackboard. There is nothing on this disk that a good physics teacher couldn't do with a blackboard, chalk, straight-edge, protractor, compass, fantastic skill in drawing and three hours for each class period.

The key differences are in accuracy and time. I can draw a good picture of what a light ray will do at the interface between air and glass. But I can't do it accurately for both red and blue light, for any pair of materials, and for 15 different angles in under two minutes. I can *talk* about the "critical angle" where light bounces off of water, but it's more instructive to "sneak up" on it by changing the angle of incidence slowly until the reflection takes place on the screen.

Besides refractive indices between two media, other options from the menu of 15 situations deal with thin and thick lenses, compound lenses, plane and spherical mirrors. In each case, one white ray will be drawn, or you have the option of doing two rays (red and blue) to show the difference wave length makes. The programs can be run by students as a "game" since a source is picked arbitrarily and then a target is placed somewhere. The object is to hit the target, no matter what media you have to go through or reflect from or refract through. This sort of "gaming" can teach a lot of intuitive feelings for what optical devices do without a lot of difficult lab setups.

The 29-page manual has a user's guide, a teacher's guide, what optical laws are being demonstrated and a list of experiments and references. A complete listing of the programs and variables used are also included on this unprotected, LISTable disk. You are given hints on modification and are encouraged to do so, to make the programs fit your exact requirements.

If the drawings aren't fast enough for you, there is also a *compiled* version on the disk that runs 2-3 times faster, although modification or even listing is then impossible.

Again, at $24.95, this disk doesn't allow you to do anything you couldn't do before, except improve accuracy, save time, and make optics more interesting. Perhaps such things are attractive to you.

Also available from Vernier, but not reviewed: *Orbit, Projectiles, Kinematics, Charged Particles, Vector Addition*, and *Wave Addition*, all at $24.95. (These programs have also undergone recent revision.)

Author's Reply:

Graphical Analysis has undergone major revisions with several new features added for the same price.

- 200 pairs of data may now be entered, instead of 32.
- Data is rounded before it is displayed—the number of significant figures is controlled by the operator.
- The appearance of the final graph has been improved.
- Semi-log and log-log graphs may be displayed.
- A hard copy of the graph can be made on any standard 80-column printer.

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Characteristics of a Scientist (Copyright 1983)
Cygnus Software, 8002 E. Culver, Mesa, AZ 85207
Target Age Group: Grades 6-12
Subject: Science
Cost: $39.00
Hardware Required: Apple II, II+ or IIe, disk drive (DOS 3.3), 48K RAM, Applesoft in ROM
Reviewed by Jack Webber, Kirkland, WA

Description

Not only does this program give the characteristics of a scientist, but it also gives a good definition of science.

The program begins by questioning students on their definition of science. The one provided by the program suggests it is a process or method of answering questions. To add a touch of class, it quotes a French mathematician!

The user is then baited with the following screen:

What is a scientist?
1. Wears a white lab jacket
2. Wears glasses
3. Male
4. Excellent student
5. Brilliant in all areas

Do you agree? (yes or no)

After the user either falls for or resists this generalization, the program goes on to define the four main characteristics of a scientist:

1. Curious
2. Observant
3. Skeptical
4. Open-minded

Each of the four parts has a definition of the word, an activity in which the user must assume that characteristic in order to succeed, and a final summary statement of how the characteristic relates to being a scientist.

The activities are the main focus of the program and are very well presented. The user must become curious enough to solve a puzzle for Farmer Crabtree of Wahoo, Nebraska, and then observant enough to remember if the head of a Lincoln penny faces left or right. The activity for the skeptical part catches the student trying to solve an unsolvable problem, while the open-minded activity concerns a beaver that seems to be ten feet tall!

A short quiz follows the lesson; it consists of 11 true/false and multiple choice questions which do a really nice job of summarizing the whole program. The score is kept and a positive comment ends the lesson.

Strengths

The program holds student interest with challenging, thought-provoking activities and occasional humor.

Use of color, sound and good use of inverse for highlighting enhance involvement; the program doesn't drag.

Escape options are provided throughout the program; at the beginning of the program the user may choose to run specific sections or skip others.

Many points in the program can be easily elaborated on by the teacher; in fact, one section even recommends asking the teacher to demonstrate facts that invoke skepticism (hot water freezing faster than cold water).

The written documentation is complete, including answers and an outline of the main points covered.

Weaknesses

A few cutting remarks about teachers and programmers struck me as more distracting than funny.

A quote and reference from the Bible (I Thessalonians 5:21) could conceivably be offensive to some. There are a few punctuation errors—something that's always annoying.

Summary

For the cost, this program should be in your collection if you teach science. It can be used either with a group or with individual students. The humor is good, the pace enjoyable, the activities stimulating and the approach refreshing. It fills a need beautifully.

Recommendation

If part of your objective in science is to define the subject and give an idea of what a scientist is, then this is a good piece of supplemental software. It contains four secondary programs that could be used as springboards for a number of other related topics such as scientific method or optical illusion. For the cost, it is an inexpensive way to enrich your curriculum.

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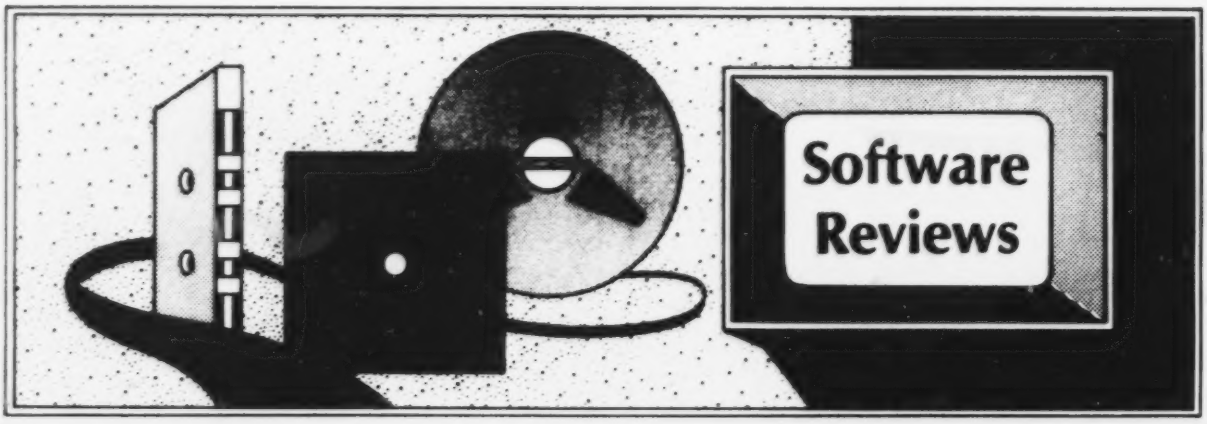

GEOGRAPHY SEARCH
Reviewed by Mollie L. Cohen
(See also related article by Mollie Cohen on page 11.)

Producer: McGraw-Hill/Computer Learning Connection. © 1982.
Cost: $180 (diskette, 25 workbooks, and Teacher's Manual).
Subject: Social Studies, Geography.
Grade Level: 5-12.
Medium of Transfer: 5¼" flex. disk.
Required Hardware: TRS-80 Model III (32K); or Apple II (48K) 3.3 DOS
Instructional Techniques: Simulation, group decision-making.

Your students are crew members of an old sailing ship, seeking the fabled City of Gold on an unknown continent across an uncharted ocean. The wind is blowing from 195° at 32 miles per hour. A student sailor carefully records this data from the ship's instruments into the Captain's Log. At noon, as the ship's clock reads 12:15, a second crew member records the ship's longitude location: "15 minutes west of Vesuvia." As a third student sailor checks the North Star to read the ship's latitude, a fourth takes a sounding of the ocean depth while another checks the food supply. Armed with their individually collected data, the student sailors meet and share information about their ship's position and together decide on the next day's plan of action.

What I've just described is not a real ocean voyage, of course, but a simulation of one called **Geography Search.** The program is one of five in the "Search Series" published by the Webster Division of McGraw-Hill Book Co. The series was developed by Thomas F.F. Snyder, a science and math teacher from Cambridge, Massachusetts, who has also formed his own company called the Computer Learning Connection. The series is being promoted for use with students in grades 5-12, but seems most suitable for average-ability classes in 6th through 8th grades (or for lower-ability students in grades 9-12). *Geography Search* would be especially useful in 6th or 7th grade geography classes and is also suitable for 8th grade U.S. History.

Program Objectives and Format

Each Search program has three main objectives: (1) to teach concepts related to subject content such as geography; (2) to teach information-processing skills such as reading, recording and interpreting data; and (3) to improve student group-process and problem-solving skills. The components of each program include the Searchbook, or student workbook which provides story and content information; a diskette for the microcomputer which provides and manipulates data for the simulation; and a Teacher's Manual (which comes in a 3-ring binder with the diskette and a sample Searchbook).

The Teacher's Manual recommends that students first read the Searchbook all the way through to become familiar with the story line and geography concepts as well as with the instructions for the simulation. Student groups of 5 or 6 members each are then selected as the crews of up to 6 sailing ships. The groups take turns at the microcomputer, getting data about their ship's present course and entering information based on crew decisions. Each turn at the microcomputer simulates one day of the voyage and is followed by meetings where crew members share information and reach decisions. The process is repeated for as many "days" as necessary until each group gets to the City of Gold and back.

The Searchbook and Program Content

Before assessing the accuracy of subject content, one has to suspend reality somewhat and accept the interplay of fact and fiction which is a deliberate part of the *Geography Search* simulation. Even the fiction, however, suggests reality: for example, students set sail from an island-nation called Vesuvia which vaguely represents Europe; they reach a New World continent which suggests the Americas, although much smaller in size. Although historical time is not an integral part of the program, the Teacher's Manual identifies the simulated voyage as that of an "ancient" sailing ship. The voyage, however, would be more logically placed historically in the high middle ages or early modern times —a relevant fact to history teachers who might use the program.

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Since the program is, after all, a geography search, the geography concepts used in the simulation are closer to fact. For example, the circular winds which blow counterclockwise and affect student sailing decisions resemble real Atlantic tradewinds. The simulation makes use of other real geography facts, too, such as the relationship of time to longitude. The Searchbook explains these and other geography concepts in clear, simple language which most students can easily understand. This is an important strength of the program. Teachers may still want to supplement the material to make it more complete—by relating the discussion of wind patterns, for example, to the use of terms like "westerlies" or "easterlies" to describe them. The use of "minutes" for longitude location in the simulation provides an opportunity to explain the system of subdividing latitude and longitude degrees—which is not in itself covered in the program.

The Diskette and Skill Development

Although it took a while to figure out how to enter today's date when I first ran the program, there was smooth sailing after that. The diskette is programmed so that as members of each crew take their turn at the microcomputer, they are given a choice of actions—whether to go ashore, follow the coast or sail away. If they choose to set sail, they must indicate the direction and duration. At the end of a turn, the microcomputer flashes new data very quickly on the screen, about the wind direction, North Star position, ocean depth, and so on, which will be needed to make a decision about action for the next turn.

The process seems confusing at first, but after a few turns the pattern becomes familiar; it then becomes easier to know what data to look for and how to record the data on the worksheets. It also becomes easier to use the recorded data in making decisions: for example, students gradually realize that if wind is blowing from the North, they must decide to sail in another direction or, if they can't see the North Star, they must be too far south.

The quality of the skill practice derived from this process is excellent. The simulation provides far more in-depth understanding of direction and location concepts and skills than would be possible with more traditional non-interactive skill materials. Latitude and longitude are no longer just flat lines on a map or globe but positions related to observable changes in the solar system which are "experienced" through the simulation.

In addition, the simulation process fosters development of information-processing skills on several levels. Here students go beyond the basic reading, writing and vocabulary-building activities of the workbook to locating and recording data (research skills) from the microcomputer. As they prepare for the next turn, students analyze, synthesize and evaluate this data, identify alternatives and anticipate consequences, thus using higher-level critical thinking and decision-making skills.

Interpersonal Skills Development

When sailing information is flashed on the screen at the end of each crew's turn, too much data is displayed much too quickly for any one student to read and record it all. Thus, a need is created for student cooperation and a division of labor. It is apparently the intention of the developers that this dilemma be resolved by students themselves who will—either spontaneously or through trial and error—parcel out the various roles of wind recorder, depth recorder, etc. among themselves. The teacher is cautioned in the Teacher's Manual not to get involved in this process or to answer student questions but rather encourage students to find their own solutions. The objective here of encouraging self-sufficient teamwork and problem solving through group interaction is to be applauded. As a teacher, however, I would have preferred that the Teacher's Manual provides some guidance on how to get the process started, or at least on how to evaluate whether the group interactions are working as well as possible.

Teaching with *Geography Search*

The Teacher's Manual of *Geography Search* includes a Record-Keeping Chart for recording each crew's progress after each turn. Also included are discussions of the overall procedure and learning strategy, a good illustrated sample of a typical turn at the computer, as well as lists of the geography concepts, vocabulary and questions (without answers) covered in the Searchbook. The list of supplementary activities provided would be even more useful if it were organized by level of difficulty.

Because the use of microcomputer simulations will be a new experience for many teachers, however, some practical suggestions on how to use them in the regular curriculum would probably be welcomed. Here this program does fall short. The Teacher's Manual of *Geography Search* does not include, for example, suggestions on how to introduce the simulation in class or when to plug it into the social studies curriculum. There are no concrete suggestions, moreover, for follow-up activities by which students can be helped to see connections between the simulation experience and course content.

The Manual does suggest that after students read the entire Searchbook through once, two sessions be allotted per week—one for rereading a section of the workbook and the other for using the disk and microcomputer. Although this may be possible in some classes, it may not be realistically possible for many social studies teachers to devote two out of five class periods per week for the simulation over an extended length of time. It is also not clear how many class periods or weeks the simulation should be expected to take. Precise estimates would not be possible since the decisions made by students affect the success of their voyages and thus the time needed to complete them. Nevertheless, some ballpark estimates of time needed would be useful to teachers who must fit the simulation into a larger curriculum plan.

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Recommendations

Geography Search would be especially useful with an introductory unit of 6th or 7th grade world geography, where sections of the Searchbook could be assigned alternatively with related material in a standard geography text. The actual simulation could follow once or twice a week, with review of the Searchbook when needed. *Geography Search* could also be effective in U.S. history classes with a unit on 16th-century European explorations; such a simulation could give students some appreciation for the experience of exploring an unknown world.

Despite some minor flaws, *Geography Search* is an excellent program for social studies and is definitely recommended. The simulation is particularly good for providing "active" learning and practice of academic skills in the context of geography or history subject content. The program also provides a vehicle for developing student interpersonal skills—an important goal of the social studies, and one which is not possible with many other existing social studies materials.

All five programs in the *Search* series will use a similar format to achieve similar objectives with social studies content. The four other programs—*Community Search, Energy Search, Geology Search* and *Archeology Search*—are expected to be available in the fall of 1982.

[Ed. note: All five programs in the Search *series will use a similar format to achieve similar objectives with social studies content. The other four programs—*Community Search, Energy Search, Geology Search *and* Archeology Search*—are now available for Apple II+ 48K, 3.3 DOS and TRS-80 Model III, 32K at $180 per* Search.*]*

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Reviews

Linda Rathje, Editor

Kidwriter (Spinnaker), ***Story Maker*** (Scholastic) and ***Bank Street Story Book*** (Mindscape) are three programs that enable young writers to create illustrated stories. Students can "make" pictures or scenes and develop accompanying stories that can be read on screen or in print. The reviewers were able to work with children as they explored these programs, and have shared their observations.

Three programs for preschool and primary grades are also included this month. Reviewer Christine Chaille sees the two Joyce Hakansson programs ***Ranch*** (Spinnaker) and ***Kermit's Electronic Storymaker*** (Simon & Schuster) as "construction kit" or "electronic tinkertoy" activities which provide the young child with opportunities for self-directed experimentation. C & C Software has incorporated a management system in their ***Letters and First Words*** program, and reviewer Scott Turner, a first grade teacher, particularly appreciates the opportunity to make program modifications.

Last, but certainly not least, is Broderbund's popular program, ***The Print Shop.*** Educators should definitely examine this versatile graphics program.

KIDWRITER

Spinnaker Software Corp., 215 First Street, Cambridge, MA 02142
Grade/Target Age Group: Ages 6 to 10
Subject: Creative writing
Hardware Required: Apple II, II+, IIe or Commodore 64, IBM PC, IBM PCjr
Color monitor recommended; joystick optional; one disk drive
Cost: $29.95 (Apple), $29.95 (IBM), $26.95 (Commodore)
Reviewed by: Chrissie Forbes, Santa Clara Elementary School, Eugene, OR, Grades 1-2

Kidwriter is a combination word processor and picture maker for elementary age children. It follows the teaching format used in many creative writing lessons: Draw a picture and then write about it. What child faced with the task of writing a story wouldn't be motivated by the fun of creating a picture on the computer screen? Any program using this format offers a potential writing tool of special consideration for the elementary teacher.

How It Works

Choosing from 99 objects, the child first creates a picture, selecting the size, position and color for each object. One object is manipulated at a time and cannot be repositioned once the child adds the next object to the picture. When the picture is completed, seven lines remain on the screen to compose a narrative or description of the picture.

When a page is completed, the child may choose to: 1) make a next page to the story; 2) start a new story; or 3) store it on disk for later reading. Once a story page has been stored, it cannot be changed.

The commands needed for editing the text are not prompted on the screen but are easy to find in the manual. On the Apple IIe and Commodore 64, the cursor is controlled through the arrow keys. On the Apple II or II+ the cursor is controlled through the Control E, D, X and S keys. Erasing is accomplished with the Escape key, one letter at a time. The child may insert letters or words, and the rest of the text will automatically move to the right. The Apple IIe and Commodore 64 versions are *very* easy to work. Young students can work independently, making it ideal for classroom use.

THE CHILDREN LIVE IN A HOUSE ON THE
HILLSIDE WHERE FLOWERS GROW A LOT.
AND A TREE GROWS THERE SPECIAL FOR
HALLOWEEN. THERE IS A JET THAT FLIES
OVER THE CHILDREN EVERY MORNING AT
NINE.

Kidwriter.

The commands for moving the objects in the pictures use the same keys used to edit on the Apple II or II+, which poses a serious problem for Apple II and Apple II+ owners. While Control E moves an object up higher on the screen, plain E erases the entire picture. While Control D moves the object to the right, plain D indicates that the child is done making the picture and ready to write the story. Once this D command is entered, changes cannot be made in the picture. My six-year-old daughter lost almost half of the pictures she made through this type of beginner's error. Choosing different keys for these commands or having an "Are you sure?" message could easily avoid these problems. (Apple IIe and Commodore 64 owners won't have this problem, because the picture objects are moved with the arrow keys.)

Strengths

Kidwriter is easy to use. I tried it out on my young daughter and her playmates, and with very little explanation they were busy taking turns drawing and composing. The short (ten-page) manual was simple to follow. It was also easy to find all the commands that might be needed. With a couple of exceptions, the program displays all the commands that a child will need up on the screen at the appropriate time.

With the range of objects, colors, sizes, positions and backgrounds to choose from, the picture-creating aspect of the program itself makes this an attractive product. Of course, if making a picture is all you're looking for, there are other more sophisticated (and more expensive) programs that allow for more creativity.

The manual is easy to use and any computer novice can experience mastery in no time. There are plenty of useful prompts and the user is asked to confirm all decisions to erase text.

Weaknesses

My daughter was frustrated by the accidental erasing of her pictures. A more glaring problem, from my viewpoint as an elementary school teacher, is the lack of editing options. Some children will want to write more than seven lines of text. When the seven lines are filled, the extra text is not automatically transferred to the next page of the "story." A sound beeps with each extra word and these words are lost. The program makes no allowance for the child who would like to write more and draw less. Also, once a child has developed a train of thought, it seems a shame to have to stop in mid-sentence to draw a new picture before being able to complete the idea.

In school (and at home) we try desperately to teach children that writing is a process involving many steps. We write, rewrite, write and then rewrite again. We move sentences around. We

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change words. We add explanations and cross out unnecessary verbiage. We remember important information or even change a story's entire focus. Because this program doesn't allow the child to retrieve a page or an old story and make changes, it could reinforce the mistaken notion children get that writing is a one-step process. With all the attention given nationally to our children's inability to write and the need to teach these essential editing skills, I'm disappointed that *Kidwriter* doesn't provide for rewriting.

A final weakness of *Kidwriter* is the lack of a printing option. If a parent or teacher is hoping to print copies of a child's work for display or examination, then this program falls short. As a teacher I would insist on a program with a printing option so that my students could take their stories home.

Recommendation

Kidwriter was the first program to combine picture making and story writing. Newer programs are more sophisticated, but *Kidwriter* will give your child plenty of opportunity to "draw" pictures and compose stories. Because of its price, ease of use and motivating qualities, I recommend that primary teachers examine this program when considering combined word processor and picture-making software for elementary age children.

STORY MAKER

Scholastic Inc., 2931 East McCarty St., P.O. Box 7502, Jefferson City, MO 65102

Grade/Target Age Group: Ages 8 years and up

Subject: Creative writing and illustrated text editing

Hardware Required: Apple II+, IIe or IIc (64K RAM minimum), single or dual disk drive, KoalaPad, joystick or AppleMouse required.
Optional printers: Epson (with a Grappler card), ImageWriter or Scribe printer

Cost: Personal edition—$39.95 (one program disk, one picture disk, documentation)

Reviewed by: Heidi Imhof, Computer and Gifted Coordinator and Advisor to the Writer's Club, Connell Elementary School, North Franklin School District, Connell, WA

Story Maker is a text editing program for children, featuring the illustration capabilities of the KoalaPad, joystick or AppleMouse. Students may draw their own pictures or choose predesigned pictures from a gallery of three picture disks: a general gallery disk containing animals, trains, etc.; and two specialized disks—one on science fiction and one on fantasy. Eight enlarged font styles allow students to select and change the typeface.

The program is driven from a simple menu. In making a new story students use the KoalaPad, joystick or AppleMouse to select representative icons to type, select from the picture gallery, draw, erase, flip or clear pages, or exit. The same selection procedure is used throughout the program, simplifying instructions to the user.

Once a picture is selected, it may be "stamped" anywhere on a page. Students decide upon the size of their graphic (two sizes are available) and may flip each graphic 180 degrees. An UNDO function allows students to erase the last graphic stamped. For other changes there is an ERASE function that operates like an electronic pencil eraser.

Story Maker.

I had some initial questions when I began working with this program: These concerns included:

- Use of a single disk drive;
- Younger students' ability to use the KoalaPad when making menu selections;
- Lack of flexibility in the number of words that can fit on a single "page;"
- A few gallery pictures and one type style that appeared hazy and difficult to recognize on the screen;
- High cost of outfitting each writing section with a KoalaPad, AppleMouse or joystick;
- The tedious job of designating the printer with each printing.

After using this program with our Writer's Club (grades four through six), nearly all my concerns were laid to rest.

It should be mentioned that Scholastic provides teachers with lots of assistance in using this program with students. In addition to thorough documentation, the school edition includes ideas for introducing *Story Maker* in your classroom, as well as a whole section of teaching activities. This activity section has some standard writing ideas—good ones you have probably seen before—but these ideas are well adapted for use with *Story Maker*. Scholastic is exemplary in providing activities which allow their software to be introduced smoothly and integrated soundly into the curriculum. Here's what I discovered in using this program with students.

First of all, *Story Maker* is highly motivating. After showing students some of the things I had produced, we began writing a story together. Students couldn't wait for their turn to write stories of their own. After I trained a sixth grader on *Story Maker*, he made appointments before school, during lunch and after school to train the many students who were interested. Believing I had hit a fluke, I shared this program with groups of first through third graders with the same result. My first graders pored over the picture gallery cards (provided by Scholastic) and started their own stories while I worked one-on-one with each student at the computer. The KoalaPad section that I had worried about provided a good fine-motor, hand-eye experience for them, and they rose to the challenge, largely refusing my help. The letter and page size proved just right for primary students, who can become frustrated easily with the small print typical of many word processors. They made very careful and individual decisions about layout, and each story distinctly reflected its author. One first grader tried several locations, sizes and directions before she was finally satisfied with her string of horses "running in a pasture."

The problem of disk swapping was a concern only to some of my fifth and sixth graders who are proficient on *Bank Street Writer* already. My sixth grade trainer said, "It was worth having to change disks to get the pictures and backgrounds on *Story Maker*." Other older students thought they might use *Story Maker* for covers and illustrated pages and *Bank Street Writer* for the text of their stories.

The picture and type style that appeared hazy to me didn't trouble my students. After using the eighth type style once or twice, most students just opted to use one of the other, more legible, type styles. Many students took advantage of the program's ability to switch

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fonts to add emphasis and interest to their stories. Pictures that were hard for me to discern were also no problem for my students. Although those brave few who decided to draw their own pictures learned how much mastery it takes to create a picture with the KoalaPad, experienced KoalaPad users were able to draw some great pictures.

In summary, my initial concerns were not valid for first through at least fifth grade. Experienced fifth and sixth graders generally recognized the tradeoffs and limitations, but were making sound decisions about appropriate use. However, I would still prefer using two disk drives, and would like to have *Story Maker* store the printer specification information.

Story Maker is simple to use, yet it takes good advantage of the computer's power. The ability to illustrate and write, with full layout control, gives children's creativity ample room for unique expression. Children can write and rewrite, as with most word processors, but can additionally redesign until they are content with their product. Scholastic has given us a fine word processing/storymaking program. After using it with children, I can heartily recommend it.

BANK STREET STORY BOOK

Mindscape, Inc., 3444 Dundee, Northbrook, IL 60062
Grade/Target Age Group: Grades 3-9
Subject: Creative writing and drawing
Hardware Required: Apple II+, IIe or IIc with at least 64K of memory, one disk drive, monitor or TV (preferably color), joystick or KoalaPad
Cost: $39.95
Reviewed by: Lynne Anderson-Inman, Ph.D., College of Education, University of Oregon

Bank Street Story Book is a new addition to the recent outpouring of commercial software designed to encourage creative writing by combining text processing with computer graphics. In a field that has captured the imaginative and productive interests of so many software developers, one might easily assume that the resulting products are roughly equivalent and that no single contender will stand out as truly exceptional. After several weeks spent examining and comparing some of these new programs, I would like to suggest that *Bank Street Story Book* is definitely something special.

Like other programs of its genre, *Bank Street Story Book* allows the user to create a multi-page story which contains both pictures and words. The story can be saved on disk and then revised, read or printed out whenever the user desires. What makes this particular program special is the range of artistic creativity and competence the program is capable of supporting, the sophistication of the word processing component, and the overall flexibility for mixing graphics and text in interesting and novel ways.

To create a picture, the user manipulates a "rubber band" cursor controlled through a joystick or KoalaPad. Upon selecting LINE from a vertical bar menu at the side of the screen, the user is free to draw anything anywhere. Use of the joystick's buttons allows the cursor to be lifted from the graphic in progress and set down somewhere else on the screen.

Bank Street Story Book.

Although the width of the line is constant, it can be drawn in any of eight different colors. For smaller detail work, and greater control, the cursor span can be decreased in size. Pressing "G" (for "Grid") constrains the cursor to move only horizontally or vertically, especially helpful for younger users who enjoy creating pictures from basic geometric shapes. Sections of a drawing can be filled with any of 21 colors. To accomplish this the user selects COLOR on the horizontal bar menu and then uses arrow keys to "mix" two of the available eight colors. A press of the joystick button and the desired color instantly fills the space targeted by the cursor. To make changes or corrections in a drawing, the delete key can be used to sequentially erase unwanted lines and colors.

To the novice joystick user, all of the above is somewhat foreign and awkward. Not having done anything of significance with a joystick before, I fumbled and fussed at great length before anything recognizable began to emerge. However, those familiar with the idiosyncrasies of this input device—even young children—seem to have no trouble adapting their already-acquired expertise to the specific demands of this program. When *Bank Street Story Book* was shared with some local second and third graders, those with previous joystick experience grasped the essential elements within a few minutes. The pictures are visually interesting and often quite stunning, especially those created by older users. Two sixth graders who experimented with the program were able to create some astoundingly sophisticated pictures; a sample story provided by the publishers indicates that a professional artist can go further yet. It's a credit to the designer that the program is easy enough for 7-year-olds, yet rich enough for adults.

To create a "storybook," however, the user needs more than an accessible graphics program. Without the ability to input text, there would be no story and hence relatively little academic value to the program. Unfortunately, this is where many such programs fall short. We still see products, for example, which accept only capital letters, do not accept the delete key, or use nonstandard procedures for altering text. *Bank Street Story Book* has avoided all of these traps. The word processing component on the program is sophisticated and easy to use. It has adopted the standard conventions for word processing programs (e.g., automatic word wrap, use of arrows to move cursor, easy insertions and deletions, etc.) and is even programmed to retain original text in memory, thus enabling revisions to be easily discarded if they are not felt to be improvements. The word processing component is accessible at any time in the process of creating a story by merely pressing "T" (for TYPE). A window appears which is then moved into place and expanded to the desired size with the joystick. A second pressing of "T" places the cursor at the top of the window, where it is ready to accept text.

From an instructional standpoint, the use of conventional word processing procedures in *Bank Street Story Book* is very desirable. Young students and those new to word processing may gain valuable skills through use of the program—skills that will later be transferable to other word processing applications. The corollary is equally true:

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Students with previous word processing experience find the program easy to learn because it uses skills they already have. As expressed by one sixth grader, "Heck, this is a snap!" The typeface used in the program is relatively small (by comparison to other programs), and this is an advantage. It allows the writer to put quite a bit of text on a single page if desired, and it facilitates using the text for labels or story dialogue.

As powerful and interesting as these two components of *Bank Street Story Book* are, it is their integration which truly makes this program exceptional. Initially the user will probably work on a picture and then write the text to go with it, or write the text and then draw the corresponding picture. It is possible, however, to go back and forth from graphic to text as often as the user wishes, i.e., drawing a portion of the picture, putting in some text, altering or adding to the picture, adding or deleting some text, and so forth. Unless given the command to FLIP, all of this will be on one "page" of the storybook being developed. When read, each page appears on the screen in the order created (i.e., the graphic is drawn before your eyes, spaces are filled with color, and the text appears in the sequence it was entered). When creatively designed, the end result is a story page which appears to come alive. With some judicious use of the WAIT command (requiring the reader to press a button for the next portion of the page to be revealed) and some well-planned deletions, the user is even able to create simple animation and the appearance of dialogue between story characters.

At any point in this process, the user can ask to read through the story being created or choose to move back and forth one page at a time and one story step at a time. This allows for later changes in the pictures and editing of the text. The tremendous flexibility built into *Bank Street Story Book* has not resulted in a program which is difficult to use. It's a program that students can be successful with fairly quickly and then, as their experience builds, learn its finer features and capitalize on its depth. (Even second graders were fairly independent with the program by the second day and able to teach the essentials to their peers by the third day.)

The stories produced with *Bank Street Story Book*, when shown on the screen, are unlike anything else students have ever been able to create. The writer not only controls the content but also, to some extent, the rhythm and pacing with which the story is read. Pages become dynamic entities which both captivate and motivate. Instead of using a computer to create replicas of traditional static pages, *Bank Street Story Book* moves the writer and the reader into a new electronic literary medium.

The potential classroom applications for *Bank Street Story Book* are many and varied, the most obvious being a tool to facilitate creative writing instruction. When using the program with young students, it was apparent that the drawing process served to stimulate their imaginations, especially when drawing curved lines (i.e., not in the "Grid" mode). After doodling for awhile, their drawings began to look like something identifiable and, when prompted, they could write a few sentences to go with the picture. For teachers using the process approach to writing instruction, the program would work beautifully to generate ideas during the prewriting stage, while at the same time supporting the development and revision of students' written products. It is the program's capacity for accepting changes and facilitating corrections that seemed to intrigue the two sixth graders who tried it. Working as a team, they spent an entire afternoon creating a story and then perpetually revising ("improving") it. Some of these improvements resulted from experimentation with the program's graphic capabilities, but a surprising percentage were text-based modifications and additions. In fact, the original story had approximately doubled in size by the time they felt it was complete.

Other possible applications might build on the program's ability to print out students' creations. Teachers using the language experience approach to reading instruction could type in dictated stories to support students' drawings and then print the individualized storybooks for later rereading and fluency building. Other students could use the program to create an illustrated classroom newsletter or a project report, complete with graphs, tables and maps.

It is always dangerous to write a review which doesn't appear to have taken a critical look at the program under examination. The enthusiastic and glowing praise of the above paragraphs may give the reader the impression that this is exactly what happened here. When beginning this review, however, I did have several areas of concern. First, the program's complexity made me wonder about its utility in the classroom: Would a teacher have time to learn and to teach students how to use it? Could the program be used by pairs of students or small groups? The first question was answered by the documentation. It is well constructed and well written. A tutorial is included to help teach the basic operations of the program quickly. Furthermore, on screen help menus are easily accessible and another tutorial is included on the disk. The second question was answered by observations of my sixth grade testers. They obviously enjoyed cooperating on the creative process and learned more about the program because of their joint efforts. Integrating *Bank Street Story Book* into the classroom should pose no major problem to teachers already familiar with microcomputers.

A second concern centered on the apparent inappropriateness of the program for children in the primary grades, even though the publishers had targeted children as young as eight. After all, if *I* had some trouble manipulating the joystick and learning the program's idiosyncrasies, they would surely feel overwhelmed! Thanks to cooperative local teachers, some last-minute testing was done with second and third graders. Observation of these young users revealed they not only loved the program, but that they could learn it easily—even from their peers.

Only my third concern remains unresolved. I would like to have at least one simple, sample story on the disk that novices can identify with and younger children can read. I felt frustrated when my drawings were in no way comparable to those included as samples (even the samples created by children!). This concern may be more a reflection of my artistic talents (or lack thereof) than the program's limitations, but it is something to consider—especially when introducing the program to younger children.

Bank Street Story Book is clearly a program to explore and I recommend it very highly. It is one of those rare programs which continues to unfold as you use it. For teachers who value the role microcomputers can play in facilitating student writing, and who are looking for a motivating way to introduce or encourage the use of this new medium, *Bank Street Story Book* will undoubtedly become a useful and highly effective classroom tool.

[The reviewer would like to thank Larry Lewin of Eugene School District 4J for his assistance in testing the program with second and third graders.]

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Reviews

Linda Rathje, Editor

Story Tree
Graphics Exhibitor
South Dakota
Dancing Bear

Teacher, Kids and Logo

A comparative review of 3 computer dictionaries

STORY TREE

Author: George Brackett
Scholastic, Inc., 906 Sylvan Avenue, P.O. Box 2010, Englewood Cliffs, NJ 07632
Target Age Group: Ages nine and up
Subject: Writing
Hardware Required: Apple IIc, Apple IIe, Apple II Plus (48K), or Apple II (with 64K or Applesoft in ROM); IBM PC, IBM PCjr (128K); Commodore 64.
One disk drive, monitor or TV, printer optional.
Cost: Retail edition, $39.95, includes Master Disk, Story Disk and User's Handbook.
Teacher's edition, $59.95, includes 2 Master Disks, 2 Story Disks, User's Handbook and Teacher's Guide.
Reviewed by: Lynne Anderson-Inman, Ph.D., College of Education, University of Oregon, Eugene, OR

Everyone loves a good adventure story, especially when the reader plays a role in deciding how the adventure will unfold. George Brackett's *Story Tree* capitalizes on this interest and takes it one step further. What could be better than ***reading*** "choose-your-own-adventure" stories? Well, ***writing*** them, of course! *Story Tree* lets you and your students do just that.

Story Tree is an exceptionally well designed piece of software that facilitates both the writing and reading of "interactive" stories, i.e., stories in which the reader makes choices determining the direction of events. Although an obvious application for a writing tool of this nature is in the creation of adventure stories, *Story Tree* lends itself to the development of other interactive genres as well. Provided as samples on the Story Disk are a somewhat silly jungle adventure in search of the magical Marigold Mine, a well researched and interesting article on the creature known as Bigfoot, and a mini data base of extremely brief book reviews organized by topic. Each uses the program's capabilities in a slightly different way and together they help to illustrate some of its applications.

The *Story Tree* program takes its name from the branching capabilities of the stories that can be created with it. When writing with *Story Tree*, the writer has three options for linking pages together:

a) A story can CONTINUE from one page to the next, as it would in any story;

b) The reader can be given a CHOICE from among two to four options, with each option leading to a different series of events or type of information; and

c) The story can be made to branch by CHANCE, leading in one direction some of the time and in another for the remainder.

If used creatively and in combination, the resulting stories can be read and reread without being repeated in exactly the same sequence.

Designed for children as young as nine, *Story Tree* is a program that has been constructed with care. The main menu provides the user with four choices: (a) Read a story, (b) Work on a story, (c) Print a story and (d) Do disk work. Each choice leads to an appropriate submenu or a listing of the available stories, and ESCAPE always brings you back to the main menu. When reading a story, the user can elect to read it from the beginning or s/he can choose another place to start by browsing through the page menu. The latter is especially useful when rereading stories, as it allows curious readers immediate access to different events and alternate endings. It is also useful when editing stories, as the page-by-page access to different parts of a story helps the writer to locate pages needing clarification or story lines needing development.

When writing a story, the user is prompted through three operations for each page: (a) writing a page title (to allow access through the page menu); (b) writing text for the story; and (c) indicating how the page should be linked to successive pages, i.e., will it CONTINUE to another page automatically, branch by CHOICE or branch by CHANCE? After making a selection on the latter, the user is asked a sequence of questions which enables the program to create the appropriate connections between and among pages. For example, if branching by CHOICE, what choices are provided to the reader and to which page should each choice lead? Although the above may sound complicated, doing it is actually fairly simple, in large part because of the excellent prompts presented to the user on screen. For writers who haven't thought out all the details of a story (e.g., only one of three alternative choices has actually been conceptualized), temporary choice descriptions and page designations (letters or numbers, for example) can be used and then changed to something more descriptive when details have crystallized. As they are being created, all *Story Tree* stories are saved on a story disk, allowing for later reading or editing. Stories can be altered or expanded at any time, thus encouraging authors toward greater detail and increasingly complicated plots.

Story Tree stories can also be printed at any time. Two *Story Tree* pages are printed on an 8½ x 11 piece of paper, and each section is marked with a page number. When cut and appropriately arranged, small books can be made from the printed pages. The capacity to print out stories is useful to students in at least two ways. First, it allows stories to be shared with family and friends. Second, having a printed copy enables the stories to be read and reread when the student is not near a computer, thus extending the educational value of the program and promoting the transfer of learned skills to noncomputerized settings. The reinforcing nature of the printed stories would be enhanced, however, if an optional large print mode were available. It

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is important for young students, as well as for older students with reading and writing problems, to see a big payoff for such a big investment of effort.

Suggestions for Use

In preparing this review I used *Story Tree* with two students (ages nine and 14), and I talked with teachers who had used the program with small groups of students or entire classes. The following suggestions for using *Story Tree* represent a blending of ideas from these experiences and discussions.

1. Prior to introducing *Story Tree*, it seems best to ensure that students have had experience with "choose-your-own-adventure" stories.* Teachers found that students who had had previous exposure to this type of story in book form approached *Story Tree* enthusiastically. Those who had not had this exposure were often unclear as to why a story should be read more than once, and were more confused about the structure of *Story Tree* stories, especially when writing them. If grouping students for work on *Story Tree*, take into consideration their experience with this type of writing. Students with little or no experience with "choose-your-own-adventure" stories should be grouped together, otherwise they tend to be overwhelmed by their more enthusiastic and confident peers and usually end up as passive participants in the creative process.
2. Collect, swap and exchange *Story Tree* stories created by students. One of the best ways to be introduced to *Story Tree* is for students to read sample stories, either in pairs or as a small group. Although sample stories are provided on the disk, they are not appropriate for all levels of students and are not written by children. The 14-year-old I shared the program with felt the stories were too juvenile, and went on to create a complex James Bond-type spy story. The nine-year-old felt Magic Marigold Mine was funny but complicated, and she couldn't identify with the report on Bigfoot at all. One of the best features of *Story Tree* is that it will support a wide variety of story types on an unlimited number of topics. Developing a library of stories for students to explore prior to writing their own will help to show off the program's possibilities and broaden its use.
3. Before writing *Story Tree* stories, it is especially helpful to teach students to map out or flowchart the sequence of events or information. This can be introduced using experiences from students' lives (to help convey the idea of choices and the impact of choices made on future events) and then by translating these experiences into the terminology used in the *Story Tree* program. The manual provides an excellent tutorial on how to write *Story Tree* stories and uses a mapping technique to illustrate the different types of page connections. Most teachers found this helpful in teaching students how to plan and keep track of their stories. (See figure 1 for the map used in this tutorial.) In general, those students who took the time to map out their stories were able to finish them; those who did not often ended up in confusion.
4. Integrate the use of *Story Tree* with practice on word-processing skills. Built into the program is an excellent and easy-to-use word processor. It can be used to introduce students to the principles of word processing or as an alternate arena in which to apply already learned word-processing skills. Although most of the word-processing commands in *Story Tree* are fairly standard, teachers will need to pay special attention to those that differ from word-processing programs students are already using.
5. If using *Story Tree* in a classroom setting, provide students with a five-minute warning before the end of the period. There is no way a

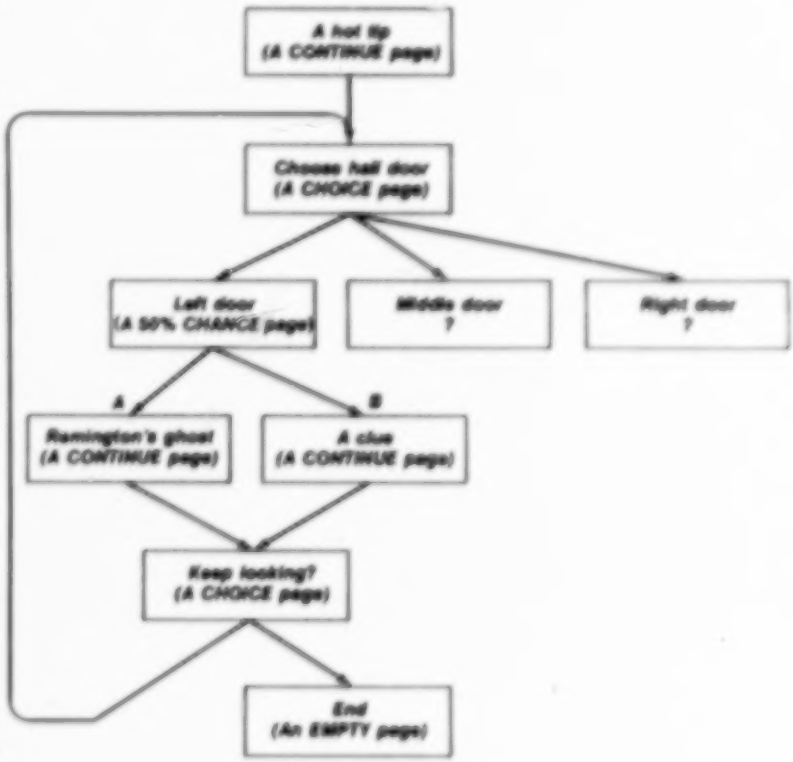

Figure 1.
mapping the sequence of events when writing Story Tree stories.

*Several book publishers produce books of this nature with varying levels of reading difficulty: *Choose-Your-Own-Adventure* by Bantam Books, *Twistaplot* by Scholastic Books, and *Which Way?* by Archway Books are three series that can usually be found in bookstores and in school or public libraries.

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page that is being worked on can be saved before completion. This means that in order to save any text that has been written, the student must also designate the type of page connection and the destinations for each option before being able to stop. This requires some time—hence the need for a five-minute (or longer) warning.

Other Applications

Story Tree is not limited to the language arts or English classroom. And even in these classrooms, the program is not limited to the development of stories. The Teacher's Manual which accompanies the educational version of *Story Tree* does an excellent job in suggesting other uses for the program and even includes guidelines for creating special types of "shells"—frameworks of pages linked together for specific purposes. A sampling of these other applications is enough to highlight the underlying potential of *Story Tree*.

In the area of social studies, for example, groups of students could use the program to write an imaginary tour of another country or another era in time. Information could be organized around specific topics, as well as by location or date, allowing readers a different experience each time they took the "tour." In science, students might write a description of the circulatory system as seen from the "inside." Different branches of the descriptive report would address different branches of the system. A class poem could be generated using the random poetry shell, a framework that takes advantage of the branch by chance option. Each student writes a rhyming couplet on the same theme. When entered into the shell, the poem can be read and reread many different times with many different results. As a final example, the program can also be used to generate on-screen multiple-choice learning activities. Choosing the correct option leads to a "right answer" page and then on to another question. All incorrect choices lead to explanatory pages with individualized corrective feedback and then a return to the original question. It is suggested that students might develop these learning activities as well as play them. Although I was unable to find teachers who had implemented any of these ideas, or others from the manual, the ideas appear to be instructionally sound.

Making a Good Program Even Better

I've yet to see a software program that couldn't be improved upon in some way, and *Story Tree* is no exception. What is already a very good program can be made even better. The following suggestions for improvement come from teachers and students who have used the program extensively and therefore build on an in-depth appreciation for everything *Story Tree* already provides.

1. It would be helpful if *Story Tree* would automatically map or flowchart a story as it is being created. Younger writers, and those with special learning problems, often become "lost" in their stories, not being able to sort out which pages went with which story lines. Being able to consult a map of the story in progress would help to minimize this confusion and concentrate student energies on the writing process.

2. Students should have the option of seeing page titles on the printed version of their stories. As currently printed, page numbers are substituted for page titles. Since the pages are identified by title and not by number on screen, this substitution makes it extremely difficult to cross reference the printed version with the on-screen version. When editing, students often use the printed version to keep track of undeveloped story lines or to identify pages needing modification. Inclusion of page titles on printed stories would facilitate this aspect of the editing process.

3. It would be educationally helpful if *Story Tree* stories would allow use of the commonly available spelling checker programs. Teachers have become increasingly convinced of their value in promoting good spelling habits, and many teachers now encourage the use of such programs on all student writing. There is no logical reason why *Story Tree* stories should be an exception.

4. And finally, students should be directed to develop title pages for their stories. Although there is nothing to prevent the creation of title pages for *Story Tree* stories, there is no mention of title pages in the documentation and no examples provided on the disk. In the eyes of my nine-year old tester, "real" stories have title pages. Providing directions for their creation would be an easy and valuable addition to the program.

Overall Recommendation

In summary, I recommend Scholastic's *Story Tree* very highly! It is a well designed program that is educationally sound and fun for students to use. Furthermore, it is extremely versatile. It could find a comfortable home at many different grade levels, and teachers will discover interesting applications in a number of content areas. Because of its flexibility, it is appropriate for classrooms with a wide range in student ability and can be used quite successfully with special needs students. It is appropriate for students to use independently, but equally effective if used with students in pairs or in small groups.

Of equal importance to teachers should be the fact that students like *Story Tree*, and once the basics are learned will often spend their own time embellishing stories begun in class. This seems to be true even for populations of students traditionally turned off to writing. One of the teachers interviewed for this review related that he had several ninth grade boys come into his computer lab daily, on their own time, in order to write with *Story Tree*. These boys taught themselves the program and then spent approximately an hour a day, five days a week, for six to eight weeks writing and rewriting their stories. Any writing software that elicits that kind of commitment deserves to be looked at seriously!

Acknowledgment

The reviewer would like to thank the teachers of Eugene School District 4J who shared their students and their experiences using *Story Tree*. Special thanks go to Tom Layton, computer teacher at South Eugene High School, who graciously shared ideas arising from his use of *Story Tree* with students who have special learning needs and also provided many of the suggestions for improving the program.

Publisher's Reply: None.

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This month TCT's reviews include two well-known products that have been expanded or revised. With *Apple Logo II*, the larger memory and special features of the 128K Apple IIe and IIc are available for Logo programmers.

The *Bank Street Writer*, on the market since 1982, has recently been revised. There are now several versions of this popular word processor available through both Scholastic and Broderbund. Also reviewed this month, the *Bank Street Speller* provides several features that may be of particular interest to both students and teachers.

For primary-grade teachers new to Logo, a resource kit by Houghton Mifflin is available. *Introducing Logo to Primary Children* provides a classroom kit of teacher-developed instructional support materials.

Two French foreign-language programs are also featured. *Les Batisseurs d'Empire*, the French-language version of *Empire I: World Builders*, has been available in the U.S. for over a year. After examining several programs, this science fiction simulation game was selected by the reviewers as one of her favorites for third and fourth year French students. *Le Francais Par Ordinateur* offers three beginning French programs. Color graphics, music and a variety of learning activities introduce the student to French vocabulary and the culture.

BANK STREET WRITER

1984, Revised Apple Version
Personal use edition:
Broderbund Software, Inc., 17 Paul Drive, San Rafael, CA 94903
School use edition:
Scholastic Inc., 902 Sylvan Ave., Englewood Cliffs, NJ 07632.
(Includes three program disks, Student Guide, Teacher's Reference Guide)
Target Grades: 4-8
Subject: Word processing
Hardware Required:
Broderbund—
40-column version: Apple II + (64K); Apple IIe (64K)
40/80-column version: Apple IIe (128K) Revision B board; Apple IIc
1 disk drive
Scholastic—
40-column version: Apple IIe (64K)
40/80-column version: Apple IIc (128K); Apple IIc
1 disk drive
Cost: $69.95 (Broderbund); $95 (Scholastic)
Reviewed by: Keith Wetzel, Computers in Education, University of Oregon

When the first *Bank Street Writer (BSW)* came out, many of us were caught by a vision of the promise it held for writing in the elementary and middle schools. Since that time I have closely observed students using word processors in the intermediate grades, and my euphoria has been tempered by classroom realities. Accordingly, this review concentrates on the new *BSW*, but it also reflects new knowledge about the use of word processors by students in grades four through eight.

As a writing teacher, my primary criterion for any word processor is that it allows students to move easily and efficiently between the different stages of the writing process. Writing is not a linear, lock-step process of pre-writing, composing and revising. Rather the process is recursive: The writer moves back and forth between pre-writing, composing and revising. This process continues until the writer is satisfied with the product.

The new versions of *BSW* for the Apple IIe and IIc, marketed by Scholastic and Broderbund, are substantially different from the original *BSW*. Each now has a free-moving cursor which may be moved around the screen in the WRITE mode to make insertions and deletions. ***This feature makes the new version significantly better than the original version.*** In addition, it satisfies the evaluation criterion, allowing students to move easily and efficiently between the stages of writing.

The original *BSW* and the updated Broderbund version when used on the Apple II + (64K) hamper revision by adopting a two-mode system: one mode for entering text and another for editing. For example, seven different steps are required to jump up two paragraphs, add a new sentence and return to continue writing. It is much easier for a student to use a word processor which allows text to be edited as it is written. For this reason, *BSW* in any edition for the Apple II + is clearly less desirable.

Apple IIe (64K) Features

BSW for the Apple IIe (128K) and IIc can do everything the IIe (64K) version can do, and more. The Apple IIe (64K) version has these new features:

- Full cursor movement on the write screen
- Printer format commands (boldface, underline, etc.)
- Optional mouse control to select functions or scroll text
- Help screen
- End-of-line character
- New-page command

Apple IIe (128K) and IIc Features

Additional features available only on the Apple IIe (128K) and IIc versions are:

- Choice of anywhere from 40- to 80-column display
- Calculator for solving basic math

Features Missing

The *BSW* developers have included some new features to make this word processing program more powerful, and other features have been left out. One missing feature is that the screen display does not necessarily show the printed format; that is, what you see is *not necessarily* what you get. With some word processing programs what you see on the screen is exactly what is printed onto paper.

Missing also is a straightforward way of single spacing portions of text in a double-spaced report.

Documentation

The documentation for the Broderbund versions and the teacher's guide for the Scholastic version are clear and helpful.

Discussion

Developers of the new *BSW* have had to make decisions concerning what new features to include. Questions needing to be addressed include: "What do students in grades four through eight need in order to write more efficiently?" "What features are needed to allow *BSW* to keep up with the features of other word processors?"

The first question is clearly answered. The decision to allow free cursor movement in the WRITE mode certainly makes the new *BSW* a more powerful tool for writing. The other question must be answered individually by the purchaser, on the basis of those features needed for his/her purposes.

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Composition Teachers

Teachers who want students to use any word processor (including *BSW*) in learning composition need to fully understand what word processors actually do. Recently a fourth-grade teacher told me, "I still have to teach my entire writing program. What is really important is what the teacher *teaches* about writing. It is not simply the computer." This reflects an important point: Word processors do not teach writing. They do not tutor students or substitute for a writing program. The word processor, rather, is a tool in the writing process.

My second caution concerns expectations: It is commonly assumed that students will write more if they can revise without recopying by hand. Before jumping to this conclusion, consider carefully whether your students can type adequately. Without this prerequisite skill, students may not write as much with a word processor as they do with paper and pencil.

Recommendations

My review of the original *BSW* appeared in the August 1983 *TCT* (Vol. 11, No. 1), when it was the only word processor designed for fourth through eighth graders that I knew of. Now there are other word processors designed specifically for students, as well as adult word processors which may be considered for students because they are not difficult to learn or use.

It was also easier for me to be enthusiastic before realizing the importance of adequate keyboarding skills and acquiring a thorough knowledge of the teaching of composition. Now word processors have been in classrooms long enough that we can "look before we leap."

Consequently, I advise that you carefully examine the idea of using word processors in composition, and if you decide to take the leap, use several word processors yourself before making a decision. Despite my cautionary tone, I find the new *BSW* is one of the top word processors available for students in grades four through eight, and I recommend you include it on your list of word processors to be examined.

Publisher's Reply

Thanks very much for sending me the review copy for the new *Bank Street Writer*. Generally, I found the review to be fair and accurate. But I did want to point out a couple of things:

The reviewer mentions that "the screen display does not necessarily show the printed format." While this is technically true, it is possible to get, quite quickly and easily, printed copies that mirror what the screen shows—and vice versa. If you are using the 40-column version, selecting "Print-Draft" automatically gives you a printout that uses the same line length as the document shown on the screen. If you are using the 80-column version, an option in the Utility Program allows you to set the screen display for 40 columns, 80 columns, or any line width between 40 and 80 columns. As a result, once you decide on the line width that you want to use in your printed copy, you can set the screen for the same display.

The Scholastic school edition of the new *Bank Street Writer* includes, on the same disk, versions that will work with the 64K Apple IIe, the 128K IIe and the IIc. This is an important feature for schools that have a mix of 64K and 128K IIe's, for schools that currently have IIe's and are planning to upgrade them with an extended 80-column card, and schools with IIe's that plan to purchase IIc's.

The reviewer also remarks that schools will have to determine for themselves which of the other enhanced features meet their needs. While this is very true, I think we've done a good job of developing and testing features that make the *Bank Street Writer* an even better product for both students and teachers. As we mention in the documentation, while the new *BSW* is just as easy to use as the original version, the expanded edition allows students to grow with the program, gradually uncovering new features as they become comfortable with the more basic functions.

Philip Miller
Senior Project Editor
Scholastic Software

BANK STREET SPELLER (1984)

Personal use edition:
Broderbund Software, Inc., 17 Paul Drive, San Rafael, CA 94903
School use edition:
Scholastic, Inc., 902 Sylvan Ave., Englewood Cliffs, NJ 07632
Subject: Spelling checker
Hardware and Software Required: 48K Apple II+/IIe/IIc
One disk drive (two required for adding words to the dictionary)
Bank Street Writer word processor
Cost: $69.95 (Broderbund); $64.95 (Scholastic)
Reviewed by: Doris Carey, Computers in Education, University of Oregon

Word processor users have definite ideas about what spelling checkers should do. They should, of course, point out spelling errors, and in addition should refrain from correcting these errors until instructed to do so, in case the word has been deliberately misspelled or it is a proper noun or foreign word that does not appear in the standard English dictionary. *Bank Street Speller* accomplishes these objectives by comparing each word in the user's text file to its 30,000-word dictionary (derived from the *Random House Dictionary*, Concise Edition) and allowing the user the opportunity to decide whether to replace the word or leave it intact. *Bank Street Speller* can't guarantee the correct spelling of words that are not in its dictionary, nor can it point out errors in style or grammar—but neither can a regular dictionary.

Bank Street Speller provides several additional features that may be of particular interest to teachers: an alphabetic list of words used with frequencies; the total count of words used; and a count of *different* words. My small sample file, for example, used a total of 52 words, but only 45 different words, since "with" was used twice and the words "a," "the" and "to" were each used three times. The list of different words with their frequencies can be printed out or viewed on screen. The totals appear only on the screen. With a bit of imagination, a teacher can use this feature for games and activities that enhance students' awareness of their vocabularies. Students might be asked to draw a histogram that illustrates their use of two-letter, three-letter, four-letter, etc., words. They might also make a game of writing a coherent paragraph in which no word is used more than once. The user can also quickly alphabetize a list of words.

Bank Street Speller will also print out a list of words that it did not find in its dictionary. Again, students can make a game of picking out words that are probably misspelled, as opposed to exotic words or proper nouns that should be retained. Teachers can decide what to do about slang, since words like "ain't" do not appear in the dictionary. Words categorized as "obscene" in my *American Heritage Dictionary* also seem to have been left out of *Bank Street Speller*. The **Make New Dictionary**

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feature allows the user to add or delete words to the dictionary and to create new dictionaries. I see great possibilities here for foreign language teachers.

Bank Street Speller's **Search Dictionary** feature is particularly interesting. It prints a list of words in the dictionary that *almost* match a particular misspelled word. For example, I included "woud" in my text file, and a search of the dictionary yielded the words "wood," "would," "word" and "wound" as suggested replacements. I was also able to check the spelling of "separate" by entering "sep?rate." Entering "r = d" gave me a list of all words in the dictionary that begin with "r" and end with "d." The question mark allows for a single character, whereas the equals sign is a wild card that allows for the substitution of any number of characters.

After I finished making changes to my text file, I decided to retain 14 of the 18 words that *Bank Street Speller* had not found in its dictionary. The four misspelled words that I did replace were printed out for me in this form:

woud ⟶ would

As a teacher, I was happy to see that students could keep a list of these corrections in a scrapbook or notebook for future reference or review.

Bank Street Speller is easy to use. Like its parent word processor, *Bank Street Writer*, the program's menus are always visible at the top of the screen, with questions and prompts appearing on screen when needed. As an experienced user of *Bank Street Writer*, I was able to fully check, edit and print out my file in 10 minutes the first time I attempted to use *Speller*. This included the time it took to obtain printouts of my word lists, errors and corrections. I spent another minute or two accessing the utility section to customize the program to accept a keyboard modification for upper and lower case letters (since I was using an Apple II+).

Teachers who plan to purchase this program should be aware that single-drive systems will require a vast number of disk changes. Once *Speller* was loaded, I had to load my file from my data disk, then alternate between the dictionary and data disk each time I needed to search the dictionary. Without these searches, I needed at least five disk changes from beginning to end, including reloading *Bank Street Writer* and the data file to print out the final copy. I would hastily add that these annoyances are not due to a design flaw, but to the limits of the technology. It would be desirable to have both programs in memory simultaneously, but the obvious tradeoff would be a requirement of more than 48K of available memory.

One small design decision that I would change is the arrangement of word lists. They are alphabetized, but appear in two columns arranged to be read left to right; I would prefer to scan down a column instead of across rows.

I would strongly recommend the purchase of *Bank Street Speller*, not only because it fulfills its objectives, but because its many features provide an environment for experimentation and creative play. I expect it won't be long before an enterprising teacher compiles a list of activities for use with this program—I wish I had the time to do it myself.

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Doris Carey

The Bank Street Writer
Personal Use: © 1982 from Broderbund Software, Inc., 1938 Fourth St., San Rafael, CA 94901. Cost: $62.50.
School Use: © 1983 from Scholastic, Inc., 902 Sylvan Ave., Englewood Cliffs, NJ 07632. Cost: $95.00.
Grades 4-12/Word Processing.
Hardware Description: Apple II, Apple IIe, Atari. (Commodore 64 being developed.)
Reviewed by Keith Wetzel, University of Oregon, Eugene, Oregon.

The *Bank Street Writer* (BSW) is a word processor designed for students. It represents a good use of the computer in an upper elementary or junior high school classroom.

Typically word processors have been adult-oriented. They require days to learn to operate, thus they are not accessible to students. In contrast, the BSW requires only one to two hours to learn to use. No knowledge of programming or math is necessary to use it.

The BSW potentially enables a classroom teacher to use the ideas of process writing—prewriting, writing and rewriting—efficiently in the classroom. One of the keys to improving student writing is to encourage students to write more. A word processor appropriate for students is motivating, and reduces the drudgery associated with editing and recopying.

How It Works

The BSW is organized like a three-page menu. The first page is the writing or text-entering page. The user begins here. The words ENTER TEXT are always highlighted at the top of the page. The first page allows the word processor to be used much as a typewriter. The move to the EDIT page is made by pressing the ESC (escape) key, with the words WRITE OR CORRECT highlighted at the top of the screen on this page.

The philosophy of the BSW's authors is evident. They wanted one mode for entering text. After the user completes entering all his/her ideas, then it is time to move to another distinct mode to correct errors, edit sentences or move ideas around.

The editing page has this menu at the top:

ERASE MOVE FIND TRANSFER
UNERASE MOVEBACK REPLACE

The user chooses the correct command by using the forward and backward arrows. When the correct choice is highlighted, the user presses the return key and follows the directions which appear at the top of the screen. The commands do what their names suggest. The user does not need to remember them because they are always present at the top of the screen.

The third page of the menu is the TRANSFER text page. This page allows the user to save the typed text. Then the text can be printed on paper, deleted from memory or retrieved from memory. Once again the choices are listed at the top of the screen.

There are error traps to prevent mistakes. The user is asked, "Are you sure you want to . . .?"

Apple II vs. Apple IIe

This word processor has upper and lower case letter capability on both Apples. The Apple II+ requires the user to press two keys (the shift key and the N key) to print a capital letter. A minor modification to the Apple II+ enables the user to type a capital letter using only the shift keys. The Apple IIe requires no modification to type capital letters in the usual format. The IIe also has a shift-lock feature which enables the user to type continuous capital letters.

The BSW can be used on either Apple. The same piece of software will operate on both machines. The Apple II+ uses the I J K M keys to move the cursor in the text edit mode. The Apple IIe has separate arrow keys ←↑↓→ to accomplish the same task. The BSW works appropriately with either machine, and the tutorial also reflects these differences.

Printed Copy

The BSW uses any standard printer and requires no special set-up. To print copies the user is required to follow the directions after highlighting TRANSFER and then PRINT FINAL. A series of questions appear which allow the user to adjust the number of characters printed per line, the spacing (single, double or triple), the numbering of each page and other printing details. After each copy the user will be asked if another copy is desired.

Limitations

There are few limitations of the BSW for intermediate and junior high age students. One limita-

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tion might be the difference between what appears on the screen and what appears on the printed copy. The BSW allows forty characters to be printed per line on the screen. The number of characters printed per line are adjusted prior to printing. The standard typing format is about sixty-five characters per line. Consequently, the printed text does not appear in identical form to the text on the screen. This does not seem to cause students any problems.

Broderbund and Scholastic

There are two versions of the BSW—they differ primarily in the audience they are directed towards, and consequently the way they are packaged and marketed. Broderbund distributes the program only to individuals, their market aimed primarily at home users. There is no preview or review period prior to purchase. It includes two disks and a small reference guide at a cost of $62.50. Scholastic distributes the program only to schools. It includes three disks and a teacher's manual. The tutorial side of the disk may be copied if you wish to use the tutorial with groups. Schools are allowed a thirty-day preview period. The cost is $95.00.

Documentation or Teacher's Guide

Broderbund's user manual is concise. In combination with the tutorial, which is on the opposite side of the disk, it answers questions and gives the user practice in entering and editing text.

The Scholastic version shares the same software. Though the word processor is the same and the tutorial is the same, the documentation is different, as it is designed to meet the needs of teachers and students. It includes a teacher reference guide, a student reference guide, a question and answer section and a student activities section. The student reference material can be copied and distributed to students.

The BSW is not easy for students in intermediate grades to learn to use—guidance is necessary for quick, efficient learning. I wanted to find out how easily a seventh grader would learn to use the BSW with only the assistance of the reference material. In forty-five minutes, and with a few questions, this student learned to use it.

How does that compare with another seventh grader using only the tutorial? The tutorial beeped often, indicating a student error. When the student made an error, the tutorial did not offer hints or an analysis of the error. The consistent beeps and the message, "You did not follow directions," frustrated the student. The student's comments upon completion of the tutorial in fifty minutes was, "It was tedious, but I did learn something." The student who used only the reference material and asked a few questions had a more positive experience.

Several intermediate grade level teachers also commented that the tutorial was not appropriate for their students. Their reasons were similar to the problems discussed earlier.

The BSW may not be understandable to the student user at first, but a judicious use of the reference material, the student activities, a teacher's oral introduction and the tutorial would seem to be an effective way to allow students to use it independently after a few hours of practice.

Rating

Both versions—Broderbund and Scholastic—contain an excellent word processor which meets a real need. The Broderbund streamlined package is fine for home use. And the Scholastic package with an additional disk and a teacher's manual is appropriate for school use. Why is the BSW excellent? First, it is an educational piece of software which does what it was intended to do—make an advanced writing tool accessible to parents, students and teachers. Second, it compares favorably in price to other commercial word processors. Third, the students who I questioned about rewriting a composition by hand or editing it using the word processor emphatically endorsed the word processor. A fifth/sixth grade teacher who uses BSW consistently for language arts activities summed it up: "I like it, but the kids *love* it."

Broderbund Distributors:

UK: Tele Swift, 189 London Rd., North End, Portsmouth, England.

Australia: Imagineering, P.O. Box 4601, Sydney, Australia, NSW 2001.

Report Card (1983)
Sensible Software, 6619 Perham Drive, West Bloomfield, Michigan 48033
Hardware Description: 48K Apple, Disk Drive (3.3 DOS), Applesoft BASIC, printer.
Cost: $59.95
Reviewed by Sam Miller, Eugene School District 4J, Eugene, Oregon.

Report Card is a grading system organized around three basic grading operations: (1) entering and editing data; (2) displaying data; and (3) printing data. The program computes grade averages and percentages and assigns letter grades on the basis of percentages specified by the user.

Report Card holds data for up to 300 students and an unlimited number of data disks may be established.

The program includes the option to sort and print student data either individually or by a class. Each class may include up to 50 graded activities. *Report Card* will also display or print the results of selected activities such as quizzes and midtern examinations for a particular student or an entire class. Data can be sorted alphabetically, by grade, or by percentage score.

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The various functions of the *Report Card* program are accessed through a series of menus. Each menu deals with a specific type of action such as entering student data or printing information. First-time users may experience some initial frustration using a system of embedded menus. However, I found that with an hour's worth of practice, the entire structure of *Report Card* became easy to manipulate.

The documentation is written with a limited amount of technical jargon and provides an introductory tutorial. The only negative aspect of the documentation is that the very small typeface is difficult to read. It would also be helpful if an index were included.

A few flaws exist in the program, but they are relatively minor. For instance, the program limits the number of letters that may be used to describe an activity to 15 letters. There are occasions when an activity name will be longer than 15 letters and it's a nuisance to have to remember what abbreviated descriptions stand for. For educators who believe in sending home frequent progress reports it would be helpful if the program allowed the user to specify some brief comments pertinent to a student's grades. Grade reports printed out by the program are a bit sterile in appearance without accompanying remarks.

Report Card has excellent on-screen prompts that assist the user by asking easy-to-understand questions and specifying the correct response options.

The program provides several features that make me want to dance in the street. These features include: (1) exceptional error-trapping that prevents the user from misassigning letter grades to a specific percentage range; (2) extremely easy editing functions that allow for spelling/grade corrections; (3) provisions for making backup copies of data easily; (4) provisions for initializing a data disk; (5) assignment of a previously constructed class roster to a new activity; and (6) the option to assign identification numbers to students for the purpose of security/anonymity.

All teachers face the laborious task of trying to keep accurate records and providing students with information about their progress. *Report Card* is an excellent example of software that fills a definite need in education. I intend to use it next year when I am faced with the task of keeping records for over 80 middle school students.

Distributor:
UK: S.B.D. Software, Unit 4, South Downwork, Osiers Road, London, England 5W18 1NL.

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Reviews

APPLEWORKS

Apple Computer, Inc.

Subject: Integrated applications program (word processor, data base, spreadsheet).

Hardware Required: Apple IIe, 80-column Text Card; Apple IIc; 64K or 128K Ram (recommended); 1 disk drive (2 recommended).

Cost: $250.

Reviewed by: Jack Turner, Computer Coordinator, District 4J, Eugene, OR.

"Yes, But Can It Climb Trees, Too?"

Imagine a school where the principal, while observing a class, could help a student set up a data base record format for a project on gas mileage as a function of engine displacement. Or where a pupil could help a teacher set up a spreadsheet template to track student progress. Or where a social studies class could create a data-based unit on the pioneers who travelled the Oregon Trail.

We now have access to a computer program—*AppleWorks*—which could benefit every participant in schools from the custodian to the principal. This program could change substantially the nature of education if its full potential were implemented by teachers, students, administrators and classified staff.

AppleWorks, an integrated tool program sold by Apple Computer, is indeed an amazing product. This $250 package combines a word processor, a data base and a spreadsheet program into a very useful productivity tool kit which is impressive, both in scope and simplicity. Although the price may appear a bit steep, it is in fact a very reasonable alternative to purchasing the three applications programs separately. You are unlikely to find any combined price total of less than $350 for a separate data base program, word processor and spreadsheet of any quality. And if you *could* find three programs at bargain prices, you would be confronted with learning three different sets of control commands. Not so with *AppleWorks*, whose three central programs all share (with very few exceptions) the same commands.

A second and even more important aspect of integration among the programs is their ability to share files. No more trying to outguess your word processor, wondering if you've left adequate text space for a table of figures generated by your spreadsheet. Now you can simply leave a marker in the text and tell the program to take care of the cutting and pasting.

AppleWorks runs with ProDOS on either the Apple IIe or IIc and while it can function with a single disk drive, you will soon want a second drive. Its capabilities are severely limited if the programs find only 64K to operate with. Maximum file length within the word processor at 64K is approximately eight pages of text; at 128K the capacity more than triples. Similarly, the data base at 64K can hold only about 140 average-sized records, while 128K will manage approximately 700. Obviously, *AppleWorks* will be perfect for the IIc with its built-in 80-column, extended memory. But even the IIc owner will soon be shopping for a second disk drive.

The program is not copy-protected; the user is instructed to make a duplicate copy from which to work. The copyright text inside the cover of the Reference Manual implies that Apple will be amenable to multi-use licensing for shared-disk systems. Inquiries can be directed to Apple Computer, Inc.

The fact that *AppleWorks* uses a memory-based architecture for its data base program allows for very rapid data manipulation, but the trade-off might seriously limit the program's value for applications like student-record keeping in a large school. Although *AppleWorks* will copy easily to Apple's ProFile hard disk, this additional five megabytes of storage capacity will not increase the number of records you can handle within a single file. The hard disk as a secondary storage device will allow you more rapid access to a larger number of data files (or text documents or spreadsheets), but it will have no effect on the maximum size allowable for each. Unfortunately, that is a function of RAM and not disk capacity. (A reminder about *AppleWorks*' primary reliance on RAM storage—back up your work frequently. *AppleWorks* makes it very easy.)

Two more criticisms that derive from system and software architecture should leaven my very favorable impressions of *AppleWorks*. It is a nuisance to have to start up the system with a separate Start-up Disk, the source of the operating system instructions for ProDOS. After an eleven-second load time, you are instructed to insert the main Program Disk which holds the three tool programs. It would have been more convenient if a single disk could contain everything needed to get you into the program, but *AppleWorks* alone is so large that there isn't enough room to include the ProDOS instructions. The other, and more serious, shortcoming is that *AppleWorks* has no true mail merge capability, at least not an automated merger. The word processor does have a feature which will cue the user to intervene and type personalized information into printed output directly from the keyboard. But it is tiresome to be interrupted and called back to the computer every three minutes as the printer pauses to wait for you to type the recipient's name into your form letter. For some users this omitted feature is a fatal flaw—particularly since the word processor and data base components are so nicely integrated in other respects. This omission also can be attributed to the scarcity of available space on the main program disk.

Haba Systems to the rescue! This software house recently announced *Haba Merge*, a companion program for *AppleWorks* which will fill the mail merge gap and throw in custom labels for mailing and other purposes. Suggested price for this new software is $69.95. It is not clear whether *Haba Merge* will print mailing labels in a format wider than "one up." While I found making mailing labels straightforward on *AppleWorks*, it can only provide the "one up" format, i.e., a single column down the sheet rather than up to five rows of gummed labels across. Haba Systems had an important hand in the creation of *AppleWorks*, so *Haba Merge* is formatted identically.

This section will look at the three main applications programs plus the clipboard where you put things which are to be moved around. Space limitations prevent this review from providing extensive detail on program operation—thorough reviews of each component could easily qualify as separate reviews. Suffice it to say that it took Apple's documentation writers over 450 pages of tutorial and reference text combined with an exceptional disk-based introduction ("Apple Presents *AppleWorks*") to provide clear user directions. While the sheer volume of documentation provided—two books, a four-page quick reference card, an interactive, two-sided disk tutorial and a disk of sample files—seems at first oppressive, it is a model of

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clarity and organization.

The Word Processor

It is clean and easy to use. Except for right margin justification, formatting is done on screen from within the text editor, so the screen is usually a literal representation of what the print copy will look like. An excellent feature allows you to execute fast and literal screen dumps to the printer from anywhere within any *AppleWorks* component. That means you won't have to wonder what that report format, made and saved six months ago under the file name "Spiffy," looks like. With *AppleWorks* you can create a format, "photograph it" to the printer with two keystrokes, and return to where you left off.

Almost all control commands and printer options use the Open Apple key in combination with one mnemonically chosen letter key; e.g., to SAVE to disk you use Open Apple-S. I was pleased at how quickly these codes felt natural to use. Even better is the fact that all such code schemes are confined to two keystrokes. The word processor I used to use required five sequenced keystrokes to invoke emphasized print.

One minor criticism with the word processor is that, except to get underline or boldface functions, you have to leave the text editor and go into the Print Options menu to make each formatting decision. For example, if you wish to center a title there appears no way to do so unless you type Open Apple-O which instantaneously fills the bottom half of the screen with options, select CN as the option needed to center the text, hit ESC to return to the text editor so that you can reposition the cursor to where the centering should end, return to printer options with another Open Apple-O, select UJ (stands for "Unjustified") and then hit ESC again to return to the editor and continue text entry. Although the description takes longer than the act, it is clumsy, particularly if you want to make a number of formatting changes in a row.

It could be that the speed you lose going in and out of the Print Options menu while composing/formatting is repaid when you save a file to disk. Thanks to ProDOS, saving even long files is much quicker than what DOS 3.3 led us to expect.

The Data Base

If you have used Quick File IIe, an earlier stand-alone data base developed by Rupert Lissner, you'll recognize the *AppleWorks* data base instantly. Lissner, who wrote all of *AppleWorks*, polished up his earlier data base for inclusion. I hope it becomes a new standard for data base programmers—it is simply superb. I have learned five data base programs in as many years; this one ends my search. Files are designed by typing up to 30 field names (20 characters maximum) and then entering your data. Maximum field length is limited to the space remaining on an eight-column line to the right of the field name. If you wish to build a data base from data already contained elsewhere, *AppleWorks* will accept it from ASCII, DIF, VisiCalc or Quick File IIe files.

The data base allows you versatility in browsing through records and in developing report formats. To view multiple records simultaneously you simply zoom (with Open Apple-Z) into the multiple-record format. If a particular record needs your editing attention, you can then zoom in on it as an expanded single-record layout—a unique feature among data bases.

The two main reporting formats are characterized as "tables" or "labels." "Tables" has printed output resembling the columnar arrangement seen on the screen when in multiple record format. "Labels" arranges information from data fields in the form typified by mailing labels; successive fields are beneath, rather than beside, each other. Perhaps not unique, but a very well-done implementation.

My only regret within the data base is that you cannot tell the program to simply repeat, or copy, information from a given field in the last record into the same field in the record you are currently typing. This missing feature would spare us many repetitious entries and speed up data loading. *AppleWorks* chooses instead to let you develop or change Standard Values, where you name the value to be inserted into one or more fields for *all* new records. The effect is the same, but the user has less flexibility.

The Spreadsheet

The maximum theoretical size of the spreadsheet matrix is 999 rows deep and 127 columns wide—an incredible 126,873 empty cells. When you begin putting information inside the cells, the practical limits shrink to approximately 6,000 cells in a 128K machine. It probably won't hold the entire U.S. budget document, but it should be adequate.

The spreadsheet has all standard math operations typically found in this type of program (no trigonometry, however) and is easy to learn. If you use the other two programs first, you will already know many of the commands. *AppleWorks* also adds some unique features that make its spreadsheet easy to learn and use. With the 80-column card's highlighting capability, the spreadsheet highlights cells you wish to move, copy, change in width or delete. The program can sort and find labels or values and can type labels that automatically extend into the following columns; it has protected cells and can split the screen either vertically or horizontally to permit simultaneous viewing of separate portions of the worksheet.

The spreadsheet has a number of unexpected features and only the order of recalculation is a bad surprise. If a cell is out of order, it will have its formula recalculated with old (and usually incorrect) values. Consequently, a bottom-line figure must follow the cells upon which it depends or the information will not be accurate. The Tutorial Manual acknowledges this problem and has a reasonable explanation for how to avoid it.

Summary

AppleWorks may not be an improvement on *Lotus 1-2-3*, but Rupert Lissner has created an exciting shift given Apple's CPU and RAM limitations. The programs work well, both separately and together. The integration is not as complete as a theoretician might demand; in addition to having no true mail merge capability, you cannot retrieve information from the records within a data base and have them transferred to your spreadsheet. I can live with that. The combined set of programs exhibits so many thoughtful ideas that it would be difficult to list them all without sounding like a testimonial.

In the best of all worlds, *AppleWorks* would be included with every 128K computer. Until that time comes, you'll need to make it happen by yourself. Unless you have very specialized needs, this program will become your most versatile computer tool.

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QUILL

DCH Educational Software, D.C. Heath and Company, 125 Spring Street, Lexington, MA 02173
Target Grade Group: 3-12
Subject: Writing
Hardware Required: Apple II+ (with 64K) or IIe, two disk drives, printer, 80-column card, green screen monitor (for greater clarity)
Cost: $150 (school price)
Reviewed by: Larry Lewin, Fourth Grade Teacher, Adams Elementary School, Eugene, OR

As a writing teacher at the elementary, secondary and college levels for 10 years, I have come to respect any writing program that understands the four-step approach to writing. When I was told that D.C. Heath had marketed *Quill*, a software program developed under a U.S. Department of Education grant, I was anxious to try it out. *Quill* is more than a word processor; it incorporates the four steps of the writing process: prewriting, composing, revising and publishing. I expected *Quill* to assist young writers in working through each step in the process to improve their writing, and anticipated a computer program surpassing both the traditional textbook instructional method and other computer software available. I now question *Quill*'s ability to do that.

Program Overview

Quill consists of three sections: the Planner, which assists in the pre-writing phase; the Library, which serves as a storage place for sharing written work; and the Mailbag, an electronic mail simulator designed to encourage students to communicate with each other by passing electronic notes. Each section is stored on a separate initialized disk and accessed when loaded into a required second disk drive. The program's word processor, the Writer's Assistant, is used to revise compositions stored in the Library.

To familiarize students with each component, the Teacher's Guide provides an introductory section, called the Cookbook, for teaching *Quill*. It also includes a set of classroom activities, an extended section teaching each command of the Writer's Assistant in an easy-to-follow sequence, and a command card. Since I had some difficulty in remembering the command steps, I referred to the Teacher's Guide frequently.

"I have four concerns with QUILL: disk access time, the text editor, spacing options and the Planner options."

Strengths

Several features of the Library impress me. First, as I typed a draft of this review, I accidentally lost two superbly written paragraphs. I pushed CTRL C in a vain attempt to call up the deleted text, but *Quill* eventually let me retrieve it by escaping through Quit, waiting out the 45-second respite, and answering the question, "Which would you like to do?" I hastily selected "4) Forget the changes just typed and leave the entry as it was." A happy reunion.

In the Library menu, a nice safety device has been included. Choosing See allows a student to read a classmate's story without unauthorized tampering. They can discuss the story, and suggestions can be made. If the author does decide to change the story, s/he selects Change to edit.

I like the menu display across the top of the screen, and the mnemonic menu items (D for Drop, M for Mix, Q for Quit, etc.). Left and right margins are adjustable, so newspaper columns, for example, can be formatted. Automatic paragraph indentation and line skipping between paragraphs present a useful format for young writers. Files can be labeled by title/author (or co-authors if you assign pairs), or by file number (chronologically). Even though these labeling options slow the exit from the Write mode, I believe teachers will like having them.

The most exciting feature of *Quill* is its ability to Mix a paragraph into a list of sentences, each beginning at the left margin. The young author can then analyze each sentence for structure, length, capital letter in first word, punctuation, and paragraph compatibility. Two quick keystrokes Mix the sentences back into paragraph form. This feature is an outstanding use of the technology to improve writing (see figures 1 and 2).

Keywords: /Review/

larry seahorse

A sea horse lives in the sea, but it is not really a horse. It is a sea animal that has a head like a horse. It is very cute. Its tail is long and curly. The tail is used to hang onto plants while it eats.

Figure 1.

Figure 2.

Keywords: /Review/

larry seahorse

A sea horse lives in the sea, but it is not really a horse.
It is a sea animal that has a head like a horse.
It is very cute.
Its tail is long and curly.
The tail is used to hang onto plants while it eats.

Another component, Mailbag, allows the student to send and receive messages to and from other individuals identified by code, or to groups via the Bulletin Board. Feedback on a classmate's story can be transmitted in this way. The Teacher's Guide claims Mailbag enhances writing instruction by encouraging various types of writing, offering varying audiences for writing, and motivating writing by personalizing it. Mailbag does all three.

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Concerns

I have four concerns with *Quill*: disk access time, the text editor, spacing options and the Planner options.

It takes almost two minutes to boot the disk, move through title pages, and make menu selections before arriving in the Write mode. Just to Quit and move out of Write can take from 45 seconds to over a minute, depending on the Quit menu selection. If I wanted to See an entry, and then decided to work on it some more, I had to leave See mode, return to the menu, select Change, and head back to the entry: one minute and 35 seconds. The fourth grade students I observed tended to engage in off-task behaviors, in spite of the phrase written across the monitor, "Watch those disk drives spin along, doo-dah, doo-dah." *Quill* does offer a shortcut allowing the user to move directly between Planner, Library and Mailbag, but at a mere *six-second* savings.

The text editor, Writer's Assistant, is the weakest component of *Quill*. A word processor must allow students to move quickly between the stages of revision. Writing is not linear; it is not a lock-step process of pre-writing, composing and revising. Rather, the process is recursive, moving from composing to brainstorming to editing and back to composing in any order until the writer is satisfied. In my opinion the *Quill* editor hampers revision by adopting a multi-mode system. The Write mode, which both enters and edits text, is subdivided into two separate commands: In and Drop. In allows the author to draft new text and to insert. Drop deletes letters or whole words. Since the author cannot delete and insert within the same command mode, s/he must move back and forth between these two modes, a process requiring seven keystrokes. It is much easier to use a text editor which allows text to be edited as it is written.

The word processing programs that are most straightforward are those which automatically adjust the format of a paragraph every time text is inserted or deleted. In contrast, the *Quill* editor is line oriented. When new text is inserted, the line is pushed into the right margin. When the margin buffer is full, the remainder of the text is temporarily erased from the screen. Although text reappears when CTRL C is pressed, there is no automatic reformatting of the paragraph. Reformatting requires yet another multi-keystroke procedure.

I was surprised to find that double or triple spacing options are not available when typing in text or when setting printer commands. The lack of space between lines makes editing of hardcopy drafts frustrating and crowds the appearance of the final copy.

The Planner component of *Quill* offers some pre-writing assistance, but is no more than an electronic worksheet. The teacher types an introductory sentence and then lists questions for the student to consider. Student answers serve as notes for the writing assignment. It is pre-writing, but does not use the technology to its potential. I respect *Quill*'s inclusion of this component of the writing process, but it lacks branching capability or the use of graphics. And, there is no option for transferring a completed Planner to the Library.

Recommendation

Quill is marketed as a tool for the "writing process approach to language arts." The Teacher's Guide discusses the four stages of that process, and the software offers a component for each stage. But I was disappointed. The Planner is limited in its ability to assist young writers in the pre-writing stage. It does no more than a worksheet, listing leading questions. The Writer's Assistant is a word processor with below-average text-editing capabilities for the drafting and revising stages.

Quill is not quickly learned. It took me many hours of practice with the manual open to the command section before I felt competent using it. And the slowness of the program in booting and moving between the sections of each program compares unfavorably with other word processors available for students.

I recommend that teachers thoroughly examine *Quill* and compare it with other writing programs before purchasing. To their credit, D.C. Heath has included a 30-day approval policy providing teachers an opportunity to determine whether *Quill* meets the writing needs of their students.

Publisher's Reply

DCH Educational Software appreciates very much the opportunity to respond to your review. While we do not share all the reviewer's perceptions of *Quill*, we have chosen not to present an item-by-item defense of the program. Rather, we join the reviewer in urging teachers to examine *Quill* for themselves. In addition, we recommend that they consult the reviews of *Quill* that have appeared in the following publications:

Teaching and Computers (November/December 1984)
Classroom Computer Learning (March 1985)
Popular Computing (January 1984)
The English Journal (March 1985)
Computers, Reading, and Language Arts (Spring 1984)
The Digest of Software Reviews (January 1985)
Early Years K-8 (March 1985)
School Tech News (September 1984)

During the more than two years that *Quill* has been in classroom use, it has been our great pleasure to hear from scores of satisfied teachers who have found *Quill* to be an effective tool for teaching the writing process. One, writing from Alaska, told us that "kids took to *Quill* like a sled dog to pulling." *The English Journal* says, "If you want a program that will motivate students to enjoy writing, help them organize their pre-writing, make revisions easier, and make publication simple, then *Quill* is what you are looking for."

The best way to evaluate a software program, however, is not to read about it, but to use it. DCH's 30-day preview policy makes it easy for teachers to see for themselves whether *Quill* is indeed what they are looking for.

Jim Harmon
Software Marketing Coordinator
DCH Educational Software

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Reviews

Linda Rathje, Editor

Musicland
Rock 'N' Rhythm
MusicWorks
Bank Street MusicWriter
Operation: Frog

TESS '85

MUSICLAND

Freelance Musicworks, Inc., 18 Haviland Street, Boston, MA 02115, 617/536-9494

Target Age Group: Child to adult

Subject: Music

Hardware Required: Apple II, II+ or IIe (64K); 1 disk drive, color TV or monitor, KoalaPad or joystick (preferably not spring-loaded), Mountain Computer Music System synthesizer cards, headphones and Y-cable or stereo amplifier

Cost: $99.95 (current version); new version (available June 1985) $100-150. Disks are copy protected. Back-up copies are $20; old versions may be upgraded for $20 by sending in old copy, or proof of purchase.

Reviewed by: Jim Ellickson-Brown, Elementary Music Specialist, Mountain View School, Corvallis, OR

Introduction

Musicland is a set of four interrelated games for exploring music developed by Martin Lamb of the University of Toronto Computer Systems Research Group. Lamb titled his program after the imaginary Mathland described by Seymour Papert in *Mindstorms*, in which the developer of Logo described a place where children could learn mathematical concepts as easily as they would learn French by living in France. *Musicland* is designed to give the user equally immediate access to the fundamental principles and expressive power of music.

"MUSICLAND is a perfect example of the realization of the idea of a learning environment with no threshold and no ceiling."

Description

The user experiments with music using four games:

In MUSIC DOODLES shapes are drawn on a music staff on the screen using the joystick or KoalaPad. These shapes are turned into notes by the program, and you can hear what you have drawn. Selected parts of these musical shapes can be moved about on the screen, stretched, squeezed and turned inside-out. You may listen to these transformed shapes at any point and plant copies of them to build complex compositions; related shapes are color-coded to show their source. The basic musical idea explored in this game is the concept of musical ideas as gestures or lines. Among the techniques explored in transforming the shapes are: transposition (moving an idea higher and lower), diminution and augmentation (shrinking and stretching a musical idea), as well as retrogradation and inversion (mirror images of a musical idea in the rhythm and pitch dimensions, respectively, created in *Musicland* by shrinking a shape past the zero point).

In TIMBRE PAINTING you give the notes of your composition different tone qualities by painting them with any of five colors. In formal music study, this is the concept of orchestration.

The designs you have made in MUSIC DOODLES appear as blocks of music in MUSIC BLOCKS. You arrange the blocks to make compositions using repetition and contrast.

In SOUND FACTORY you explore and change the tone qualities of the col-

In Musicland, you explore music by making pictures. The pictures and patterns become melodies and the colors determine the tones of the melodies.

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ors you used in TIMBRE PAINTING, learning about the physics of sound in the process. The tone colors created may be taken back to be used in TIMBRE PAINTING.

Included in the package is a 25-page manual and a set of activity cards for each game, including some suggestions for integrating *Musicland* with studies in language arts, mathematics and science.

Using the Program

The primary input device in *Musicland* is the KoalaPad or joystick; the user is required to use the keyboard only occasionally. The first of these instances is the main menu, where you may see a description of the games, specify whether you are using a joystick or KoalaPad, reset the original blocks and tone colors which come with the program, or go to one of the games. You may return to the main menu from any game by pressing the ESC key and confirming your decision.

Once inside a game the input device controls a cross-shaped cursor on the high-resolution graphics screen; choices are made by pointing to words or icons on the screen and pushing one of the buttons. Arriving in MUSIC DOODLES, for example, you will see a grand staff in the center of the screen; positioning the cursor on the word DRAW above the staff and clicking one of the buttons will turn the cursor into a pencil, ready for use. To draw a line, you position the pen with the joystick or KoalaPad and hold down a button as you move. At this point the additional options PLAY, UNDO, CLEAR, SAVE and TRANSFORM also appear, allowing you to hear your work, erase a mistake, begin anew, save a piece and begin to develop an idea. You are also given the options of viewing a help screen, restoring a saved piece, going to TIMBRE PAINTING to orchestrate your work, or taking your composition to MUSIC BLOCKS.

Choosing the TRANSFORM option turns the cursor into an arrow. You select notes to transform by painting over them; pointing to DONE and pushing a button completes the selection. Bringing the cursor onto the staff you will see a copy of the notes you selected. If you move higher and lower on the staff, they move with you; press the first button and you will hear what the notes sound like in a particular spot. Pushing the second button will plant a copy of the shape; it will become colored and remain. You may plant many copies of the same shape and even erase the original. Stretching, shrinking and turning ideas inside-out is done using the keyboard. When you want to hear your work, selecting DONE will return you to the main MUSIC DOODLES screen where you can play your work. If you are satisfied with your work, you may begin a new cycle of transformations; if not, select UNDO to restore your composition as it was, including an erased original.

Once you have constructed a piece, you may take it with you to TIMBRE PAINTING. Selecting one of the five colored squares at the top of the screen will let you hear the tone quality associated with each; the cursor has now become a paintbrush. Moving onto the staff, push a button to begin painting. You do not have to cover notes completely and do not need to worry about being messy. When you select PLAY, the computer will clean up the screen and let you hear the result. You may then choose another color and continue painting. At this point you may wish to go to MUSIC BLOCKS, either via the main menu using the ESC key or by way of MUSIC DOODLES if you wish to take your work with you.

Arriving in MUSIC BLOCKS, you will see on the bottom of the screen five squares, each a miniature version of a music doodle. Above these is a blank area with room for 15 blocks. You may listen to a block before selecting it; choosing a block will place it in the next available free space. You may hear the arrangement you have created when you wish; each block lights up as it plays. A block may also be dragged to a new place, gotten rid of (by dragging it off the screen) and inserted; UNDO, CLEAR, SAVE and RESTORE options are also available. Included with *Musicland* is an original set of five blocks: a smiling face, a fragment of a ragtime song, and three blocks which may be arranged to play a familiar children's song.

The fourth game, SOUND FACTORY, allows you to experiment with the timbre or tone color of a note. If you produce something you like, you may take it with you to TIMBRE PAINTING. You use the KoalaPad or joystick to adjust the volume and pitch, and control the amount of 16 different harmonics or overtones. You may also examine the resultant waveform, draw your own freehand, and make adjustments in the envelope (the volume of a sound from beginning to end) and overall length of the sound. When *Musicland* plays a note, it actually plays two notes at once; you may offset these slightly to produce an effect similar to that of two instrumentalists playing together.

Strengths

Musicland is exceptionally well designed and easy to use. The documentation describes the games in detail and provides suggestions about introducing them to students; the set of learning activity cards includes guidelines for their use based on age group, ability level and experience with the games. In keeping with the intent of the program, these activities provide opportunities to explore both the structure and emotional content of music.

Musicland has been a valuable addition to my elementary school classroom. Younger children invariably grinned as they painted over the notes in TIMBRE PAINTING; when I presented an arrangement of four familiar tunes to some of my older students, they showed exceptional care in orchestrating the piece to bring out each tune. Third grade students spontaneously clapped when one student correctly arranged a set of MUSIC BLOCKS to form a song the group had just learned. A fourth grade student who struggles to keep up with many traditional activities of the class repeatedly sought out extra time to use the program. And when one of the most able students in the class also asked for extra time with the program, the two ended up working together to master the entire set of games without any help from me.

These examples are an indication of the role *Musicland* might play in teaching and motivating students of widely differing backgrounds and abilities in elementary and middle school, and beyond. *Musicland* could also serve as a valuable outlet for musical expression for the handicapped student.

Almost everyone responds to and enjoys music, but the difficulties of mastering instrumental technique and understanding musical notation often inhibit the development of this innate musicality. Many computer music programs compound the problem by requiring use of the typewriter keyboard and computer jargon. *Musicland* breaks down all of these barriers, encouraging musical self-expression and exploration, which can in turn develop the desire to understand and master instrumental technique and traditional musical notation.

Weaknesses

As impressive as *Musicland* is, it has four important shortcomings:

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The first is the lack of choice of musical scales. A musician often thinks of composing a musical gesture or line based on a limited set of notes; this choice profoundly affects the sound of a musical line and is an important compositional decision. In *Musicland*, the musical lines drawn in MUSIC DOODLES are interpreted in terms of the complete set of notes or chromatic scale. Although I realize the value of having all 12 notes to work with, and know I can make adjustments by transforming individual notes upward or downward, the feeling of immediacy is not the same. Allowing the user to choose from or construct various scales would have added additional power to the program; imagine exploring the effect of the same drawing played in several different scale systems.

The second problem is the lack of control of tempo. The ability to change the overall speed at which a piece is played would not only add increased musical interest, but would also make it possible to adjust to students' ability to follow a given score. The ability to step through a piece note by note would also be valuable.

The third problem is the absence of a file management system. Only one student's work may be stored at a time on a disk. I have had several students create excellent compositions only to lose them permanently when another student's turn came.

The fourth problem is the limited set of sample compositions which come with the program. The most obvious need is for more pieces to be used in MUSIC BLOCKS and TIMBRE PAINTING. Additional sets of tone colors for use and study would also be of value.

Technical Details

The KoalaPad is far superior to a joystick for use with *Musicland*—the program was designed with a graphics tablet in mind. Oddly enough, each time you boot the program it assumes you are using a joystick unless you specify otherwise. If you forget to do so, you will notice the cursor jumping to the upper lefthand corner of the screen each time you lift the stylus. This will create unwanted lines on the screen if you are holding the button down at the time; it may also result in an accidental selection of the PLAY option. When the program expects a KoalaPad, the cursor stays in place when you lift the stylus; nice straight lines may be created by lifting the pen as you hold the button and placing it down at the desired destination.

When the *Musicland* program scans your work in MUSIC DOODLES, it scans from left to right, turning the lines you have drawn into rectangular notes on the staff. Notes of longer durations are indicated by wider rectangles and may range in pitch from F below the bass clef to A above the treble clef. Sharps and flats are shown by placing the rectangles slightly higher or lower in relation to the lines and spaces; this system is very clear, although it presents a slight challenge in the area between and above the staffs. The program can accommodate a maximum of 120 notes in one screen.

Musicland interprets your drawing as switching on or off elements of a grid 35 units wide and 41 units tall. The grid is scanned from bottom to top, and notes in the same column may not be closer than three half steps. The musical result of this is that a solid line drawn along the side of the screen will become a diminished seventh chord with the lowest element of the line determining the notes of the chord; also, if two notes are placed one or two half steps apart, only the lower note will remain. In the horizontal dimension, a solid line drawn along the top of the screen will become one long note. While transforming shapes you may notice a related effect when two notes of the same pitch are placed next to each other and they fuse into one long note; to create a rhythm on a single pitch you must leave an empty element between each note. If you are attempting to create a set of musical blocks based on a traditional song, the result of all this is that one block may contain two measures of 4/4 time with some possible loss of rhythmic accuracy at the sixteenth note level.

The *Musicland* disk is accessed continuously while the program is being used. Moving from MUSIC BLOCKS to MUSIC DOODLES takes roughly 36 seconds, while moving from there to TIMBRE PAINTING takes about eight. Disk access for individual commands takes roughly three to four seconds per command.

Future Developments and Other Considerations

The Mountain Computer synthesizer cards used by *Musicland* were chosen to obtain optimum musical quality on the Apple and are available from Freelance Musicworks for $295. The University of Toronto Computer Systems Research Group is continuing work which should support this hardware investment. Among the projects currently being explored are a compositional tool which would combine traditional musical notation with the user interface and transformational capabilities of *Musicland* and an intelligent ear training program that would diagnose areas needing improvement and adjust itself to the student.

Musicland is presently being developed for Atari and Commodore computers. Two critical elements in evaluating the success of these adaptations will be the manner in which they utilize the sound chips built into these computers and how the speed of disk access affects the overall performance of *Musicland* on these computers.

The copyright for *Musicland* belongs to The University of Toronto Innovations Foundation, which has licensed the rights for commercial development of the program to Freelance Musicworks. This arrangement allows the Innovations Foundation final approval over the product without acting as a commercial software vendor.

Summary

Musicland is a perfect example of the realization of the idea of a learning environment with no threshold and no ceiling. Its user interface is so transparent and the concepts it presents so powerful that children as young as six can explore musical material normally taught in a college composition class. Unique among computer music programs, *Musicland* places equal emphasis on learning the structure that underlies music and on developing individual creative expression through music. I would consider use of this program in a variety of contexts including elementary, middle-school, high school and college classes and with learners ranging from the musically untrained to the experienced musician.

Publisher's Reply

We are aware of *Musicland*'s limitations: The new version of *Musicland* will have disk storage capability, as well as additional sample compositions to be used in MUSIC BLOCKS and TIMBRE PAINTING. We are also working on making it available for other computers.

There tends to be a popular conception that *Musicland* is just for kids. This is not quite accurate. *Musicland* has in fact been used with college students at the Berklee College of Music in Boston. In addition, one individual won an international composition award for his work with *Musicland*.

John Amarol
Freelance Musicworks

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BANK STREET MUSICWRITER

By Glen Clancy

Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062

Target Age Group: Nine to adult

Subject: Music

Cost: $49.95

Hardware Required: Commodore 64 or Atari (48K), one disk drive, TV or monitor (preferably color), dot matrix printer with graphics capability (optional)

Reviewed by: Jim Ellickson-Brown, Elementary Music Specialist, Mountain View School, Corvallis, OR

Description

Bank Street MusicWriter is based on the idea of creating the musical equivalent of a word processor, where the user can enter and edit three-part (Commodore) or four-part (Atari) musical scores. Music can be played back at any point; each voice can be separately controlled by volume and sound envelope. High resolution graphics provide visual feedback—notes light up as they play. The user may adjust the speed (tempo) at which music plays and obtain printouts of all or individual voices.

Documentation consists of a three-page introduction to the program, a 24-page description of the software features, a 23-page tutorial stepping through entry of an arrangement of "On Top of Old Smokey," an eight-page introduction to music fundamentals, and two pages of advanced techniques. A quick reference card has a flowchart and summarizes program commands; included on the back of the disk are seven sample compositions.

Using the Program

Using *MusicWriter* is easy. From the main menu the function keys are used to highlight one of 12 options; this menu can be reached at any time by pressing the left arrow (or ESC on Atari) key. Selecting NEW PIECE, for example, you are advised that any work in memory will be lost and asked to confirm that you wish to proceed. You are then asked to choose a key signature and taken to the main editing screen, which consists of two grand staffs. The cursor is a small arrow which points to where the next music symbol will appear. Using IJKM (Commodore), the cursor can be moved around the screen, while a prompt at the top of the screen advises you of the pitch name of the cursor's location. Pressing the P key lets you hear a note without entering it. Pressing any of the number keys 1, 2, 4, 8, 6 or 3 enters a whole, half, quarter, eighth, sixteenth or thirty-second note respectively and advances the cursor an appropriate amount. Rests, dotted notes, triplets, sharps, flats and ties are entered by preceding these numbers with other keys. Pressing O makes subsequent notes sound an octave higher than written, the S key changes the direction of note stems, and the V key switches from voice to voice. Pressing the B key enters a bar line—you do not have to enter a bar line at the end of each staff. The shift keys are used to allow quick movement of the cursor keys from side to side as well as switching and scrolling from one staff to another; two of the function keys allow you to go to the first or last staff of your piece.

Additional editing functions include insertion, deletion, turning off selected voices, slurring or tying notes, copying music, erasing notes, repeat signs, and first and second endings. Additional options allow checking for accuracy of time signatures, setting the tempo and altering the sound envelope of each voice. During playback the speed may be increased or decreased using the F and S keys; playback may be ended at any time by hitting the left arrow (or ESC on Atari) key. A variety of disk functions include playing an entire disk (ALBUM) or selected tunes (JUKEBOX), formatting disks, renaming, deleting, copying and chaining pieces (MEDLEY). In addition, the score for any composition may be printed out using a graphics printer.

Suggested Uses

Bank Street MusicWriter has many possible uses. In my classroom I used it successfully with kindergarten through fifth grade students. Three main uses emerged:

1. **As a tool for the teacher to illustrate musical ideas and as an aid in group composition.** When discussing musical ideas with my students, *Bank Street MusicWriter* gave me an additional way to make the symbols of music writing come alive for students. Students were excited by the way the notes lit up as they played and liked the different colors of each voice. The ability to change the tempo makes it easy to adjust the speed to the ability of students to follow the display. One second grade class developed a composition in which

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two voices travelled from high to low while a third voice jumped by octaves to stay out of the way of the others. The class sang along as they watched the piece unfold; one student who rarely participates actively in class was very attentive and commented on how interesting it was to him. For fourth and fifth grade classes I was able to use the copy function to illustrate the entry of voices in two rounds that the students had studied. When playing the sample excerpt from the Nutcracker Suite which comes with the program, I found it was a good idea to give the students a listening task—they were easily able to find the A-B-A structure of the piece, raising their hands when the contrasting middle section of the piece began and when the first section returned. When using the computer in this way I have found it most effective to have the program loaded and leave the monitor turned off until needed; my class can then engage in their regular music class activities and use the computer as an additional learning tool, rather than having it be the primary focus of the class.

2. **For individual student work in composition.** I quickly found many of my students interested in working with the program during their free time. One fifth grader who takes piano lessons quickly mastered the cursor movement, note entry and copying functions and could work independently; another student was very interested in entering a piece she had performed for the class and dictated for me as she played the tune by heart. A third student wanted very much to work by himself; he soon had notes from all voices scattered over the screen. Playing it back the computer made sense of it, but we found it difficult to follow the score; a valuable discussion ensued. In traditional music notation, notes are written from left to right; notes that sound at the same time are written so that they line up vertically. *Bank Street MusicWriter* follows the first of these conventions but not the second. As a result, music notes sounding simultaneously will light up together but will be lined up in the vertical dimension *only if* you make an effort to do so.

3. ***Bank Street MusicWriter* can be used independently by students as a practice aid,** adjusting the tempo to fit their skill level as they play along with the computer, following the notation. Both my students and I enjoyed this activity. In using the program in this manner, I found it was a good idea to include an introductory section of steady beats during which the user can adjust the tempo and a contrasting four-beat phrase signalling that the piece is about to begin.

Strengths

Bank Street MusicWriter excels in its graphics. Scrolling from one screen to another is very fast and produces the effect of a turned page rather than scrolling. This is accomplished technically by beginning the scrolling while the last notes of a staff are being played. The highlighting of each voice as it plays is also very effective in helping students follow the notation. The main menu is easily accessible from anywhere in the program, prompts are very clear, and incorrect key presses do not lead to disaster. Disk access is reasonably fast and users are able to select files using a convenient menu format.

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Weaknesses and Quirks

As excited as I am about *Bank Street MusicWriter*, I found several areas for possible improvement:

1. The tempo selection provides 16 possible tempos. Five of these are in the range of 72 beats to 224 beats per minute, while the remaining 11 are in the range of 26 to 64 beats per minute. It would be much better to have a larger range of moderate to fast tempos to choose from.

2. The copy function lets you make one copy of a passage. Music frequently consists of one musical idea used repeatedly. It would have been very exciting to be able to take one idea and copy it repeatedly; as is, one has to repeatedly cut out the part to be copied. It would also be nice to have an UNDO function in case a mistake is made in placement; this is especially irksome since the DELETE function works only with all voices.

3. The tutorial is excellent in its thorough description of entering notes. The harmonization used, although rhythmically quite clever, appears to my ear to be in the wrong key (C would have been more appropriate than F).

4. The raspberry sound which greets an incorrect key press is a little louder than necessary. I would prefer an option of no response and silence.

5. *Bank Street MusicWriter* appears to be designed for the home market. Teachers using the program must rely on their own skills to develop a method for teaching the program to their students. A more comprehensive disk library of compositions would be a nice addition.

And, among the quirks:

1. The keys to select octave higher and the natural sign lie very close to the cursor control keys. It is very easy to select these accidentally.

2. When you delete a note, the cursor advances. To stay in the same place you must press the space bar, then the J key to back up.

3. It takes some time to get used to the idea of the cursor pointing *to* rather than being *at* the point where a symbol will be entered. When copying music it is important to note the vertical position of the cursor when you mark the beginning of the passage to be copied; otherwise, you may wind up with an undesired transposition.

Summary

Bank Street MusicWriter is of use to both the novice and experienced musician. The software performs very well with exceptional graphics. The documentation is well done with clever dialogue and illustrations; the user interface is consistent and easy to understand. *Bank Street MusicWriter* is not and was not designed to be the most powerful computer music editor, but it can provide you and your students with a valuable tool for learning, exploration and self-expression.

Publisher's Reply

Mindscape appreciates Mr. Ellickson-Brown's careful review of *Bank Street MusicWriter* by Glenn Clancy. We would like to reply to a few of his points of criticism.

MusicWriter was specifically designed to be as powerful and easy to use as possible. The copy function works accordingly, in that the size of the passage to be copied is not limited to the few measures one is usually allowed in programs offering repeat copy and UNDO options. With the power offered in *MusicWriter*, whole sections of music can be reproduced with one action. The requirement to use markers and follow

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on-screen prompts with each instance of copying may seem repetitious but it promotes ease of use by eliminating any possibility of the user getting lost. Last, the review mentions the need to place the cursor vertically when copying to avoid "undesired transpositions." We feel the ability to easily transpose while copying, simply by placing the cursor at a new starting pitch, is one of *MusicWriter*'s best features.

Ease of use was also considered in choosing keys to select Octave and the Natural sign. The "O" for Octave and "N" for Natural are easy to memorize and understand. The proximity of these keys to the cursor control keys results from keyboard layout on the Commodore only.

Once more, ease of use is exhibited by the fact that the cursor advances when a note is deleted, allowing the user to delete a whole line of notes without advancing the cursor each time.

Finally, the review states that *MusicWriter* was not designed to be the "most powerful music editor." Glen Clancy's goal was, in fact, to design the most powerful music editor available for microcomputers. Judging from a thorough analysis of other products, we feel this goal was achieved: *MusicWriter*'s word-processing approach to composing and editing; full range of notes and rests; ties, triplets, endings, repeats and other musical markers; ability to easily copy, delete, transpose, check time signatures and print out scores; plus many other features make *MusicWriter* a very powerful composing and editing tool.

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